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THE PROBLEM OF TUBERCULOSIS IN CHILDHOOD.

By H. D. Chadwick, M.D., Superintendent, Westfield State Sanatorium.

TUBERCULOSIS affects mankind differently according to the age period. In infancy it is a generalized disease; in childhood it assumes a glandular type; and in adult life the pulmonary is the usual form. Adult tuberculosis is but a later stage of the glandular and peribronchial disease in children. Tuberculosis, therefore, should be considered one of the common diseases in childhood, and suspected in every child that seems debilitated or has obscure symptoms.

To understand why we have these distinct types it is necessary to consider how the body reacts to infection at the different age periods. An infant infected with tubercle bacilli develops general miliary disease and meningitis. The tissues have not acquired as yet the power to react when invaded by the bacillus, and therefore tubercle does not tend to localize. In childhood, however, the ability to react to infection has developed, and localization of the bacillus occurs most often in the lymphatic glands, or, more rarely, in the bones. As the result of this reaction tubercle first forms in the invaded glands. We have then a stage of infection, and whether this develops into disease depends upon many factors. This power of reaction, or, as we often term it, resistance, varies with different individuals and with different races. When the reaction is sufficient, fibrous tissue develops about the tubercle and encloses the bacilli so completely that they are imprisoned and can do no harm as long as the wall remains intact. If, however, the child's vitality is lowered by unhealthy living conditions, or by an intercurrent disease, more often when of an inflammatory type like pneumonia, measles or influenza, the resistance is overcome, with the result that the wall of the tubercle is softened, the bacilli are released, and the disease spreads to adjacent tissue. That is the pathological condition when pulmonary tuberculosis, the disease, develops.

I want to emphasize the difference between infection and disease. Nearly all children before they reach sixteen years of age have at some time taken into their bodies tubercle bacilli, either through the air or food; that is, they have become infected and are potentially tuberculous.

In a great majority of children the tubercle remains latent throughout life, although the child is sensitized and reacts to the tuberculin test. If, however, the infection is awakened into activity by one of the causes mentioned above, symptoms appear and then we have clinical disease.

The early symptoms of tuberculosis as exhibited in childhood are somewhat different from those we consider characteristic in later life. Children are less apt to complain and tell us of their bad feelings. Their first symptoms are subjective. It is only by close observation that these symptoms are discovered. These are also more transient, and may be masked by more noticeable conditions, such as earache, enlarged tonsils, adenoids, skin eruptions or eye diseases. In any ailing child where diagnosis is not clear tuberculosis should always be considered either as the primary cause of other symptoms or as a smoldering secondary condition.

In taking a history of a child, if it is found that there was intimate or prolonged exposure to an active case of pulmonary tuberculosis it is almost certain that that particular child is infected — not necessarily diseased, but there has been implanted a focus which, if the environment is not good or the child does not have sufficient nourishment or becomes debilitated from other disease, will be almost certain sooner or later to cause signs and symptoms of tuberculosis.

Do not, however, expect to find a positive family history to account for every tuberculous child, because in 34 per cent of 200 of our cases no direct exposure to a recognized consumptive was acknowledged. Our investigation shows that a tuberculous mother is more apt to infect a child than is the father; a diseased sister is more dangerous to a sister than to a brother; and a brother is more likely to infect his brother than his sister. The more intimate the association in childhood the more certain it is that infection will follow, and it is to be assumed that where exposure is both intimate and prolonged the number of bacilli taken into the child's body is greater, and therefore where such is the case the disease is most likely to follow infection.

Symptoms vary with the location of the tubercle and also with the amount of local reaction set up by the presence of the bacilli. If the local reaction is marked the tubercle soon becomes encapsulated in fibrous tissue, and no general systemic disturbance is evident. Occasionally, however, an individual has very little if any immunity or power to react to infection. Such persons might be said to have a pacifist constitution. When invaded by the enemy they offer no resistance to its presence, and allow the invader to spread with such rapidity that death occurs within a few weeks. They have a fulminating type of tuberculosis. The usual form, however, runs a chronic course due to an inherited or acquired relative immunity. In these cases fibrosis occurs in the tuberculous area, and the disease tends to become quiescent or arrested.

Infection in nearly all children is first localized in the bronchial glands and about the root of the lung. If disease develops from this infection the glands at the hilus enlarge and become congested, and absorption of bacillary products takes place from the active tubercle. The immediate results on the child will be listlessness, undue fatigue, lack of appetite, and, if the temperature is taken in the late afternoon, it would be found one-half to 1 degree above normal. The child may exhibit nervous irritability or seem dull in school. A small loss of weight will occur, but first there will be a considerable period when the child will fail to develop normally either in height or weight. When enough peribronchial irritation develops, either from inflammation or pressure, cough will begin. Ill-defined and vague transitory pains in legs and body may be complained of, which are caused by the toxemia. These symptoms are the most early manifestations of the disease in childhood, and when they occur a thorough physical examination is demanded. The examination should be complete and not confined to the chest. The symptoms which I have mentioned other than cough might be due to various conditions in which there is toxemia, or to tuberculous disease elsewhere than in the lungs. The tonsils or adenoid tissues may be diseased, the teeth carious, adenitis of the cervical region, axilla or groin, mesenteric or peritoneal tuberculosis may be present. Other infection must be considered and excluded.

In the early stage of bronchial gland disease the physical signs will show impaired resonance confined to the interscapular region only. There is no characteristic change in the breath sounds; no râles are to be heard. The whispered voice may be pronounced below the seventh cervical vertebra, — the D'Espine sign. If the disease advances it involves the adjacent peribronchial pulmonary tissue, and then radiates toward the apices and usually extends to both. Percussion at this stage not only shows dullness between the scapulæ, but this extends upward into the supraspinous fossæ. The next advance invades the anterior part of the apices, as shown by dullness above the clavicles. Even when percussion shows marked consolidation it is uncommon to hear râles in these children until they have advanced lesions. The tendency of the disease at this age period is to remain peribronchial and of a fibroid type. Radiographs may show the diseased bronchial glands to be enlarged on one side of the root of the lung more than on the other, but the infection is almost always bilateral, and the radiating shadows showing extension of the disease along the bronchi extend to both apices in most cases. In advanced disease, when the pulmonary tissue is involved and when râles and bacilli appear, the signs and symptoms are like those found in an adult.

During the bronchial gland and peribronchial stage the disease is very different in its manifestations. This period is the true incipient stage of pulmonary tuberculosis. The symptoms of childhood tuberculosis in the early stage are those of a toxemia resulting from tuberculous absorption. Cough may be entirely absent, and no signs or symptoms indicating the focus of disease may be present. The disease is a relapsing one in its characteristics. The symptoms of fever and fatigue depend upon the activity of the child. When the diseased child is not exerting himself the symptoms are in abeyance. A little overfatigue, by too much play or lack of sleep, will cause prompt return. Such a child has no reserve strength, and, if in school, is apt to be looked upon as lacking in ambition, or is called lazy. They lack strength to keep up continued mental or physical work for long at a time. They can neither work nor play as normal children. When a child with that history comes to your notice you will find in most instances evidence of bronchial gland tuberculosis, or may be of more advanced disease, if you look for the physical signs I have described. It requires considerable experience, and the constant practice of percussion to keep the ear trained to detect the early changes.

I would emphasize, also, the fact that symptoms should be given far greater weight than physical signs. The symptoms indicate an active process. Physical signs indicate the location and extent of the disease. Keep in mind, also, that the signs remain after the disease becomes inactive or arrested; therefore a child showing signs without symptoms does not require treatment other than general hygiene. Cough is not pathognomonic of tuberculosis, as many pharyngeal and bronchial infections, as well as enlarged tonsils and adenoids, may produce it.

Weakness is the most constant of the warning symptoms. Children with a focus of active tuberculous disease require frequent rest periods. Poor appetite is present in about one-half of the cases coming for treatment. With the sanatorium routine of frequent rest periods, restricted exercise and play and sufficient sleep, practically all those except the advanced cases begin to regain their appetite and gain in weight.

On admission to the sanatorium about two-thirds of our children were under weight and underdeveloped for their age, but fully one-third were normal or above normal in weight on admission. This should be remembered that in a series of 200 children 33 per cent were well developed and nourished and normal in appearance. Symptoms of toxemia in any child, however well he may look, should suggest tuberculosis, and the focus will most often be found at the root of the lung.

TREATMENT.

Children having symptoms of active tuberculosis respond to sanatorium treatment if they are reached before the tubercle has broken down and the lesion becomes an open one. If, however, the case is advanced and the sputum is positive, the prognosis is not as good as in adults at a corresponding stage of the disease, even when given the best conditions for treatment.

The order of the day in our children's ward is as follows: breakfast at 7.15; school for those who attend the morning session, 9 to 11.30; thirty minutes lying flat on their beds without pillows; then dinner; 1 to 2.30, rest on the bed; then school for those who did not attend in the morning. Each child has a glass of milk at 10 A.M. and 3 P.M., rest on the bed from 4.30 to 5, then supper. Bedtime comes at 7 o'clock. The children who are not in school in the morning session have these hours for play, and the children who attend the morning school have the afternoon hours for play. The schedule, as you will see, breaks up the daylight hours into short periods, so that there is a frequent change of activities and rest. This is important, and the short sessions of school are a rest from physical exercise. We feel convinced that school has a therapeutic value, because during the months of July and August, when our teachers are away, the children do not show as much improvement in their physical condition as in the other months of the year. It is possible that the summer heat may be partially responsible for this, but the enforced rest from active exercise during the school hours is certainly beneficial.

I am not an advocate of open-air schools in this New England climate in the winter months; neither do I think it necessary to sleep out of doors in the extreme cold weather. There may not be such a thing as too much fresh air, but there certainly is such a thing as too much cold air, especially for a debilitated patient. Cool air is stimulating, but severe cold takes away too much bodily heat, and may serve to further depress and enfeeble resistance. Our schoolrooms are of an open-window type, with sufficient radiation under the windows so that the temperature in winter can be modified and kept above 40 degrees, except in the most extreme weather. The school children do their best work, however, when the room temperature is between 45 and 58 degrees. Children sitting in a schoolroom having a temperature below freezing have to be wrapped up in clumsy blankets or bags, their fingers numbed and their minds dulled from cold. They are not as mentally alert and attentive as they would be if they were in a more comfortable temperature. Because the usual public school buildings have closed windows and the rooms are overheated, it is unnecessary to go to the other extreme and eliminate both rooms and heat. A reasonable provision for both fresh air and artificial heat is the rational solution.

The problem of tuberculosis in childhood resolves itself into these premises, — tubercle bacilli are omnipresent and children are ubiquitous, and all of them are susceptible to infection. The result is that nearly all are infected. The infection usually occurs in the bronchial glands about the hilus, and peribronchial tuberculosis is the form it takes if disease follows infection. Only a small percentage of the infected develop the symptoms of disease during childhood. The pulmonary disease of adults is due to the lighting up of the tuberculous focus which has been quiescent since childhood. To prevent pulmonary tuberculosis in an adult we should treat that individual when he or she is an infected child, and do everything possible to increase resistance and create a reserve at that age by improving personal hygiene and home conditions. Keep in mind, also, that all exposed children in the home of a consumptive are infected. If a child exhibits malaise, undue fatigue, unaccountable febrile attacks, and has signs indicating enlarged bronchial glands, it is evident that infection is passing over the border line and becoming tuberculous disease. Treatment measures such as I have outlined should cause arrest when in this bronchial stage. If not taken in hand at this most favorable time the disease may smolder on until early adult life, when it develops into its usual pulmonary form.

It is probable that childhood infection prevents or makes more difficult additional infection from without in later life. A thoroughly healed focus also increases resistance to tuberculosis to some extent. Unfortunately, however, a tuberculous focus rarely becomes so well healed and walled off but what a lowered vitality from whatever cause, or other inflammatory pulmonary conditions, may break down the old tubercle and allow the released bacilli to spread to new areas. It is useless to attempt to learn the source of infection in the case of an adult with tuberculosis by inquiring about the patient's immediate associates. The truth will be more apt to be gained by asking about his environment and health as a child. An adult need not be afraid of new infection, but he should have a wholesome respect for that which he has carried about in his tissues since early life.

Tuberculosis workers must reluctantly admit that we have thus far accomplished but little in preventing infection. We can, however, do much toward keeping the infected child from becoming diseased by improving the conditions in the homes and schools. We can also restore to a satisfactory degree of health the diseased child by beginning at the right time and instituting right treatment. This, I venture to predict, will in time be adopted as the most vulnerable point of attack in the fight against adult tuberculosis. Build up the resistance in childhood that the adult may reap the benefit.

THE SCHOOL LUNCH.

By Alzira Wentworth Sandwall, S.B., Health Instructor on Foods, Department of Public Health.

PRACTICALLY one hundred and eighty days each year hundreds of school children in Massachusetts leave home early in the morning carrying their luncheons under their arms. Most of these children have had an early breakfast, some a very inadequate one, and a great many none at all. Is it not, therefore, most important that the luncheon they carry, which is to help build their bodies and provide for their activity, should contain the right kind of food?

Too often it is hastily prepared and hurriedly eaten, cold, with little or no supervision, and does not furnish the best foundation for successful work, nor contain proper nourishment for the development of strong bodies.

A poorly nourished child cannot grow into a physically strong man or woman, nor can he develop mentally as he should.

The Container.

A wise choice of the box itself and its accessories is important. The container should always be one that is convenient to carry, can be thoroughly cleaned and allows for ventilation.

Types of Containers.

The collapsible tin box, which can be obtained at the large department stores for 50 cents and folded when empty, affords one of the best containers. It is easily cleaned and provides for the necessary ventilation. If such a box cannot be secured, a square tin cracker box, or a small tin pail with holes punched in each side for ventilation, is convenient. A basket is very satisfactory; a covered one can be secured also for 50 cents. A basket should be lined with paraffin paper to prevent the food from drying in warm weather and to keep it dry in damp weather. The paper box, which is often used, absorbs odors quickly, and should be discarded after a few days' service.

PACKING THE LUNCHEON.

The luncheon should be carefully packed so that it will be tempting and palatable when the box is opened. Each article of food should be separately wrapped, and all heavy articles should be packed in the bottom of the box.

The child can be taught to unpack and air the lunch box as soon as he returns from school, and to arrange it, as far as possible for the next morning by cutting the paraffin paper in convenient pieces, gathering together the paper napkins, cups and other equipment, wrapping the fruit, or filling the little jar with the canned fruit, etc. This will do away with much of the last-minute hurry and confusion in the morning.

ACCESSORIES.

The following accessories simplify the successful packing of the luncheon: —

1. A good supply of paraffin paper for wrapping food.
2. Paper napkins, one of which may be spread on the desk for a table cloth.
3. Paper cups and small paper containers for drinking purposes and to hold cooked foods.
4. Small knife, fork and spoon.
5. Small screw-top jar or bottle for milk or desserts.
    - (*a*) The half-pint Thermos bottle which can be obtained for $2.50 is the most satisfactory container for the drink. It keeps the drink hot in winter and cold in summer.
    - (*b*) The bottle in which citrate of magnesia is sold (30 cents) makes an excellent container for drinks. It is so made that there is no danger from leakage.
6. Small, light-weight custard cup.

MENU FOR LUNCH.

In planning the basket luncheon the same rules should be followed as in planning other meals. Food should be provided to build and repair the body tissues, to give energy, to regulate the body processes, and to maintain health and promote growth. For convenience, the food may be grouped as follows: —

1. Protein or tissue-building food.
    - (*a*) Animal kingdom.
        - Lean meats.
        - Poultry.
        - Fish.
        - Milk.
        - Cheese.
        - Eggs.
    - (*b*) Vegetable kingdom.
        - Peas.
        - Beans.
        - Lentils.
        - Cereals.
        - Nuts.
2. Carbohydrates, heat and energy forming.
    - (*a*) Foods providing starch.
        - Potatoes.
        - Rice.
        - Hominy.
        - Cereals and their products, such as breads, macaroni and spaghetti.
    - (*b*) Foods providing sugars.
        - Sugars.
        - Syrups.
        - Honey.
        - Molasses.
        - Jellies.
        - Fruits.
        - Some vegetables, such as carrots, beets, parsnips, etc.
3. Fat and oils, heat and energy forming.
    - Butter.
    - Cream.
    - Olive oil.
    - Bacon.
    - Other edible fats and oils.
    - Salt Pork.
    - Oleomargarine.
    - Peanut butter.
    - Nut margarine.
4. Mineral matter and water build bones and teeth and purify blood; regulate body processes.
    - (*a*) Mineral matter.
        - Vegetables, especially the green vegetables.
        - Fruits, both fresh and dried.
        - Milk.
        - Eggs.
        - Cereals.
    - (*b*) Water.
        - Water purifies body, regulates body temperature, and is needed in every cell and tissue of body.

5. Foods providing certain dietary essentials or vitamines.
    - Milk.
    - Eggs.
    - Fruits.
    - Vegetables, especially the leaf vegetables, such as spinach, celery, cabbage, onions, cauliflower.
6. Food providing bulk or cellulose helps to prevent constipation and aids in digestion.
    - Fruits.
    - Vegetables.
    - Cereals and coarse breads.

Some food from each group should find its place in the school lunch box.

The menu must necessarily be restricted, and generally resolves itself into sandwiches, fruit and a dessert, which should be simple in character and easily digested. Whenever possible, some surprise should be packed in the luncheon. This will give a pleasant anticipation for the luncheon, and create a happy atmosphere which will make for good digestion.

Since sandwiches form the most substantial part of the box luncheon, the bread must be of the best quality. It should be at least a day old, and the butter for spreading should be softened by creaming.

To avoid monotony, sandwiches should be varied often. This can be done by using different kinds of filling and by varying the kinds of bread used.

Raisin bread, nut bread, brown bread, the various kinds of dark breads, rolls, baking powder biscuits, muffins and corn bread may all be used to advantage.

Rolls hollowed out and filled with chopped meats or salads are especially tasty. Cutting the bread into different shapes often tempts the appetite, and makes acceptable something that otherwise might not meet with favor.

Pickles, olives, pimentos and condiments should be used in sandwiches for older children only.

Raisin or nut breads make good sandwiches when spread only with butter. These breads are also well liked when spread with brown sugar or honey. The following list of sandwich fillings may prove helpful.

Sandwich Fillings.

Meat.

Minced ham and tongue.
Minced ham and egg.
Minced corn beef.
Minced meat with celery or pickles.
Sliced meats.

NOTE. — Mustard, onion, Worcestershire sauce, tomato sauce and celery salt are good seasonings for meat sandwiches.

Fish.

Minced sardines with egg yolks.
Minced sardines with pickles (chopped).
Minced salmon with celery or parsley.
Minced tuna with celery or parsley.
Minced halibut with salad dressing.
Minced fish with chopped pepper.

NOTE. — Lemon juice, celery salt or chopped celery are good seasonings for fish sandwiches.

Cheese.

Creamed cheese for brown bread sandwiches.
Creamed cheese and raspberry jam.
Creamed cheese and jelly.
Creamed cheese and olives.
Creamed cheese and nuts.
Creamed cheese and green pepper.
Creamed cheese and pimento.
Creamed cheese and minced beets.

NOTE. — Cheese used may be cottage cheese, cream cheese or grated and creamed American cheese.

Lettuce.

Lettuce with salad dressing.
Lettuce with chopped nuts and salad dressing.
Lettuce with chopped olives.
Lettuce with minced sardines.

Sweet Sandwiches.

Stewed prunes with chopped nuts.
Plain jelly or jam or marmalade.
Chopped dried fruits stewed until soft.
Chopped dried fruits with nuts.
Chopped dates with ginger.
Honey.

Egg.

Minced egg.
Minced egg with chopped pickles or olives.
Minced egg with spinach.
Minced egg with chopped celery.

NOTE. — Stuffed eggs or cold boiled egg with plain bread and butter sandwiches make a good combination.

Miscellaneous.

Peanut butter.
Chopped apple, nut and celery.
Baked beans.

NOTE. — When nuts are used they should be finely ground.

Fruits.

Fruits are welcomed with the dry sandwich, and their use is a most palatable method of introducing minerals into the diet. They are valuable, also, for their acids and indigestible fiber, which acts as a laxative. The dried fruits, canned fruits and sweet fruits are useful agents for supplying sugar in an easily digested form. The fruits divide themselves into three groups, as follows: —

1. Dried fruits such as dates, figs and raisins.
2. Fresh fruits of all kinds.
3. Canned fruits or stewed fruits.

Fruits should be selected that will contrast with the sandwiches to be used. All fresh or dried fruits should be thoroughly washed and dried.

Desserts Other than Fruits.

The child always delights in a sweet of some kind, and as it supplies him with material for energy, it has a real place in the diet. Care must be used in the selection of the sweet. It should be simple in character and easy to digest, and should always be eaten at the end of a meal.

Such sweets are simple cookies, plain unfrosted cake, sponge cake, gingerbread or custard. Pies, rich cakes, doughnuts or oversweet desserts should be avoided. Simple candies or sweet chocolate may be given occasionally.

Dessert may form Main Part of Luncheon.

Two or three times a week it is wise to have the dessert form the main part of the luncheon, and in place of the simple cake, cooky or fruit, use one of the protein-rich desserts, such as custards, cornstarch, cereal, rice or tapioca pudding. When these desserts are chosen the sandwiches should, of course, be simple in character.

Liquid or Drink.

The luncheon is not complete without a drink of some kind. This may be pure water, milk, cocoa or a fruit drink, but never tea or coffee. When milk is carried in the summer, some arrangement should be made to keep it cold. The children should be encouraged to bring milk, or cocoa made with milk.

HOT LUNCHEON PLAN.

At best, however, the box luncheon must be regarded as a makeshift, and where there can be no regular school luncheon, it is often possible to make arrangements to have one hot dish prepared at school to supplement the regular luncheon.

Wherever a hot dish has been served at noon the physical condition of the children has improved and a higher grade of scholarship has been attained.

Advantage of the Hot Luncheon Plan.

1. Improved physical condition of pupils.
2. Improved power for learning.
3. Makes discipline in the afternoon much easier. (Restlessness, irritability, "nerves," etc., are often the result of faulty nutrition.)
4. Does away with the hurried, haphazard method of eating.
5. Gives an opportunity to teach habits of cleanliness, good table manners, and proper eating habits.
6. Tends to draw the pupils and teacher together socially. Current events can be discussed and helpful conversation can be encouraged.
7. An opportunity is provided for the teacher to interest the pupils in food values and to inculcate a proper appreciation of food, especially when they help in its preparation.

Miss Alta Emerson tells us in her report of the William Whiting Canteen in Holyoke, which supplied soup for ten schools, that there was marked improvement in the physical condition of the children, and that "tangible results were seen in the quality of the work done by the children. In three instances children who were doing poor work in school improved rapidly after they began to take the soup, and these children attained a record of 100 per cent in their grade. One girl in the third grade was especially anemic, and was in the habit of falling asleep every afternoon. She became a regular patron of the canteen, and after two weeks she ceased to fall asleep. She was thought to be mentally deficient until the advent of the canteen, when she began to receive 100 per cent in some of her work."

Suggestions for the Hot Dish.

When the hot dish is to be prepared by the pupils and teachers, and is to supplement the box luncheon, it is well to serve only one hot dish, which should be varied daily, and be nourishing but simple in character and easy to prepare. Such dishes might include the following: —

1. Cocoa.
2. Cream of vegetable soups.
3. Dried vegetable soups.
4. Chowders.
5. Creamed dishes.
6. Scalloped dishes.

Table of Measurements.

3 teaspoonfuls (t) = 1 tablespoonful.
16 tablespoonfuls (T) = 1 cup.
2 cups (c) = 1 pint.
2 pints (pt.) = 1 quart.
4 quarts (qt.) = 1 gallon (gal.).

EQUIPMENT.

The list of equipment given below is a typical list which must be modified to fit the need of each school: —

1 kitchen table.
1 high stool.
1 blue flame oil stove, 3 to 4 holes (or electric plate).
1 oven.
3 enamel kettles (10, 8 and 6 quart sizes).
2 4-quart double boilers.
1 1-quart double boiler.
2 enamel sauce pans and cover (1 and 2 quart sizes).
2 earthen mixing bowls (4 and 6 quart sizes).
3 earthen bowls (1 quart size).
2 earthen baking dishes (1 and 2 quart sizes).
6 tablespoons.
6 teaspoons.
1 long-handled cooking spoon.
2 steel case knives.
2 steel forks.
2 paring knives.
2 butcher knives.

2 salt and pepper shakers.
1 glass measuring cup.
1 tin measuring cup.
2 white enamel pitchers (1 quart size).
6 glass jars (1 quart size).
1 meat chopper.
6 2-quart glass jars.
2 dozen jelly glasses with covers.
1 enamel dish pan.
1 enamel rinsing pan.
1 butter jar (earthen).
1 egg beater.
1 flat grater.
1 bread tin.
1 flour sieve.
1 galvanized pail.
1 mop.
Dish cloths and towels.

Individual Equipment.

1 soup bowl.
1 plate.
1 knife.
1 cup.
1 spoon.
1 fork.

In some schools the children bring their own individual equipment, but if possible, and there is sufficient storeroom at the school, it is best to have this supplied by the school, that it may be uniform.

Recipes.

Cocoa. (Will serve Twelve.)

9 T cocoa.
12 T sugar.
3 c boiling water.
9 c scalded milk.

Scald milk in double boiler. Put sugar and cocoa in same pan, and slowly pour on the hot water, stirring constantly. Boil five minutes and add scalded milk. Beat with egg beater and serve.

White Sauce.

White sauce is the foundation of all cream soups, creamed vegetables and scalloped dishes, and is composed of a liquid, fat and a thickening agent which is usually flour.

White Sauce No. 1.

1 to 1¼ T butter.
1 to 1¼ T flour.
1 c liquid.
Seasoning.

Note. — This is a thin sauce, and is used for creamed toast, cream potato soups and creamed starchy vegetables.

White Sauce No. 2.

2 T flour.
2 T butter.
1 c milk.

NOTE. — Medium sauce used for cream soups, creamed vegetables and scalloped dishes.

White Sauce No. 3.

3 T flour.
3 T butter.
1 c milk.

NOTE. — Thick sauce used for croquettes.

Methods of Making.

No. 1. — Melt butter in double boiler, add flour, stir until smooth and add liquid gradually, stirring constantly until smooth. Cook at least twenty minutes over hot water.

No. 2. — Scald milk in double boiler, leaving out ¼ c. Mix flour and cold milk to a smooth paste and pour gradually into hot milk, stirring constantly until thick and smooth to prevent lumping. Allow it to cook for at least twenty minutes.

Cream of Vegetable Soups. (All Vegetables may be used.)

Make White Sauce No. 1 and add cooked and mashed vegetable pulp and seasoning. Let stand over boiling water at least one-half hour to blend flavors.

Cream of Potato Soup. (Will serve Twenty Children.)

4 qt. White Sauce No. 1.
1 qt. mashed potato, with water in which they were boiled.
1½ T celery seeds.
2 slices of onion.
1 T chopped parsley.
Salt to taste.

Cream of Celery Soup. (Will serve Eighteen Children.)

1 bunch celery.
4½ c boiling water.
Salt and pepper to taste.
9 T butter.
9 T flour.
9 c milk.

Wash and scrape celery and cut into small pieces. Add the water and cook until very soft and tender, being careful to renew water as it boils away. Mash in water in which it was cooked, and add to white sauce made from milk, butter and flour.

Cream of Pea Soup. (Will serve Eighteen Pupils.)

4 cans peas.
3 T sugar.
3 c cold water.
9 c milk.
9 T butter.
9 T flour.
Salt and pepper to taste.

Heat peas in their own water, add sugar and cold water, and cook twenty minutes. Rub through sieve, retaining water. Make white sauce from milk, butter and flour, and combine mixtures, stirring until thoroughly blended.

Cream of Tomato Soup. (Will serve Twelve Pupils generously.)

4½ c tomato.
½ t soda.
9 T butter.
7 T flour.
9 c milk.
Salt and pepper to taste.

Cook tomato until soft enough to strain. Strain, add soda and allow to stand five minutes. Make white sauce of milk, butter and flour, and combine mixtures. Serve immediately.

Dried Lima Bean Soup. (Will serve Eighteen Pupils.)

2 qts. water.
1 c dried beans.
1 slice onion.
2 T butter.
2 T flour.
1 t salt.
¼ t pepper.

Soak beans over night in plenty of cold water, drain, add 2 quarts of water. Cook slowly till soft (about 2 hours), then rub through a sieve. Mix flour and seasonings with butter, add a little of bean pulp, blend thoroughly, add remainder of bean pulp, heat and serve.

NOTE. — Other varieties of dried beans or lentils may be used in place of lima beans.

Salt Codfish Chowder.

1½ ounces salt pork.
1 T chopped onion.
3 c potatoes cut in small pieces.
1 qt. milk.
½ lb. salt codfish.

Break fish into small pieces, soak it in lukewarm water until it is soft and salt has been removed. Cut pork into small pieces; cook until brown, adding onions last part of cooking; add potatoes; cover with water and boil until tender. Add milk and fish, reheat and serve.

Corn Chowder.

Use recipe for salt codfish chowder, substituting one can of corn for salt codfish.

SCALLOPED DISHES.

Macaroni and Cheese. (Will serve Six People.)

1 cup macaroni, broken into small pieces.
2 qts. boiling salted water.
1 c milk.
2 T flour.
¼ lb. cheese.
½ t salt.
Spk. cayenne pepper.

Cook macaroni in boiling water and drain. Make white sauce of flour, cheese, salt and milk. Mix with macaroni and serve, or put macaroni and cheese sauce in alternate layers in baking dish, cover with crumbs and brown in oven.

NOTE. — One cup rice may be used in place of macaroni.

Rice and Tomato.

6 c cooked rice.
6 T butter.
6 T flour.
3 c strained tomato.
3 slices onion cut in pieces.
Salt and pepper to taste.

Cook onion with tomato until soft. Make tomato sauce of tomato juice, butter and flour. Cook twenty minutes, mix with rice. Heat and serve.

NOTE. — Macaroni may be used in place of rice.

Creamed Vegetables.

Pare and cut vegetables in small cubes and cook in enough boiling salted water to cover. Strain and retain the water in which vegetables were cooked. Make White Sauce No. 2, using for liquid milk and water in which vegetables were cooked. Add vegetables and reheat.

Creamed Chipped Beef.

Make White Sauce No. 2, add chipped beef and reheat.

A very large number of our school children are suffering from malnutrition, and it is reasonable to suppose that this malnutrition may be partly due to the inadequate noon luncheon.

We must recognize that malnutrition and underweight are serious defects, and not only predispose the child to other diseases, but so handicap him that he is retarded in normal physical and mental development.

There are very few schools where it is absolutely impossible to serve at least one hot dish, and no better work can be done for the health of the school children than by making it possible for every one of them to have a hot, nourishing luncheon.

I am indebted to Miss Stella Simonds, home demonstration agent of Norfolk County, for the following report, which I feel will be helpful to those who are interested in establishing the hot school lunch plan in their community: —

REPORT OF WORK DONE ON WARM SCHOOL LUNCH PROJECT IN NORFOLK COUNTY.

Visits were made during the winter months to consolidated and outlying schools in the county for the purpose of observing lunch conditions. In the majority of the schools visited there were from 15 to 75 children eating a cold noon meal. The interest of school officials, local organizations and parents was solicited and steps taken to serve a warm dish with the lunch. Lack of finances made progress slow, but through the excellent assistance and co-operation given by local women's committees lunches were started in three towns. In ten other schools where the lunch had previously been established assistance was given by the home demonstration agent in completing the organization and overcoming difficulties encountered.

Organization of New Lunches.

Each town presented an individual problem in organizing a warm school lunch, but no problem was so complex that it could not be overcome. In the towns where the lunches were started talks were given by the home demonstration agent before parent-teachers associations, women's clubs and granges to arouse local interest in the need for the lunch. Further assistance was given in furnishing lists of equipment needed for the lunch, providing recipes, and through conferences, to assist in the organization.

A survey of the conditions in the Randolph grammar schools showed that 75 children were eating a cold lunch daily. Sixty dollars were earned by the conservation department of the Women's Club through a moving-picture benefit. With this money equipment was purchased and gas piped into the school which made possible the serving of 75 children with cocoa.

The initiative in starting the warm school lunch in the Franklin schools was taken by the district nurse. A plan was devised whereby the cocoa was prepared in the domestic science kitchen and sent out to four grammar schools in large covered milk cans. In order to make a daily cup of cocoa available to the many children who could not afford to pay for it a play was given, and a food and candy sale held, by the pupils and teachers, and $109 raised.

The problem of serving cocoa to 75 children in two grammar schools in Foxborough was overcome by a committee of interested women who volunteered their services and the use of the thrift center for the preparation of the cocoa. Thirty dollars were earned by this committee through a food sale, and were spent in purchasing cups and equipment. Time was given to preparing the lunch each day by five women who were members of the committee. The Parent-

Teachers' Association has co-operated with the women's committee this year, and a paid worker has been put in charge of the preparation of the lunch. Ninety children are served with cocoa daily at a rate of 3 cents per cup.

Plans for a warm lunch in the Nevins consolidated school in South Weymouth were started in the spring. The school superintendent and principal were taken by the home demonstration agent to visit a lunch operating under similar conditions. From the interest aroused, plans are under way for fitting up the Nevins school for a warm school lunch.

The civics committee of the Sharon Women's Club requested a conference with the home demonstration agent regarding the organization of a warm school lunch in the grammar school. Plans and equipment were discussed, recipes given and lunches in operation recommended for the committee to visit. A warm lunch in the Sharon school will be started as soon as arrangements are completed.

Assistance given to promote Lunch.

Assistance has been given ten schools where the lunch has been previously organized. The assistance varied, depending upon the local problems. In one rural school, where only cocoa had been prepared, a demonstration was given in the preparation of a cream vegetable soup. Following the demonstration a weekly menu was established, including a different soup each day, with cocoa served only once a week. Problems in the organization of the serving of the lunch were encountered in several towns and assistance has been given.

County Chairman of Warm School Lunch Project.

At the last annual meeting of the Farm Bureau a county project chairman for the warm school lunch was appointed to co-ordinate the work and assist the local project leaders and the home demonstration agent in furthering the project. Four lunches were visited by the county chairman and the home demonstration agent during the late spring, and it is hoped that the remaining schools in the county will be visited this coming year to note conditions and give assistance. A report of the work done in promoting the warm school lunch in the county was given by the project chairman at the sectional county conferences held in June.

Talks given to promote Warm School Lunches.

Nine lantern slides have been made from pictures taken of the warm school lunch work done in the county. These slides have been used by the home demonstration agent in giving an illustrated talk on the subject of warm school lunches for rural schools at the State conference of school superintendents and at a conference of Plymouth County women.

Summary of Work done.

That the warm school lunch has been of value in improving the physical, mental and moral conditions in the schools has been brought out in reports given the home demonstration agent from teachers in schools where the warm lunch has been introduced.

In one school where the janitor takes an active interest in the preparation and serving of the lunch we were told by him that before cocoa was served with the lunch quantities of good food were thrown in the wastebasket each noon. Since the introduction of the cocoa no food is thrown away.

The principal in one school said that previous to serving the cocoa with the lunch several of the boys had been buying their lunch at a near-by bakeshop; they are now bringing their lunch from home so that they can take advantage of the cocoa.

One teacher has noticed that a daily headache which one child had been experiencing has disappeared since the warm cocoa has been served at noon.

From several schools the report has come that with the serving of the warm lunch at noon the mental alertness of the pupils during the afternoon session has improved and a better co-operative school spirit has developed.

A TYPHOID FEVER INVESTIGATION.

By Dr. Francis A. Finnegan, State District Health Officer.

On Sept. 9, 1919, a case of typhoid fever was reported from the town of A, Mass. Investigation of this case revealed no cause. The milk supply was obtained from Mr. W of A, which supply is also furnished to the city of X, some 3 miles distant.

On Sept. 1, 1919, Mrs. B, 10 First Street, city of X, became ill. A physician was called on Sept. 8, 1919, and, thinking of the possibility of typhoid, he took a Widal, which was returned negative, whereupon the case was diagnosed influenza. The physician evidently thought that one negative Widal was sufficient to rule out typhoid; also he failed to realize that a positive Widal is not obtainable until at least ten to fourteen days have elapsed.

Alice B, the daughter of the above-named Mrs. B, became sick Sept. 29, 1919. Two Widals were taken, the first one proving negative, the second one positive on Oct. 14, 1919. She was accordingly reported on Oct. 15, 1919, as a case of typhoid fever. Investigation showed that her mother was still running a slight temperature some six weeks after the onset of her illness. Because of this, and the fact that the daughter was a case of typhoid fever, a consultation was held, whereupon it was suspected that Mrs. B was a convalescent typhoid case. Mrs. B is now in the hospital, where a positive Widal has been obtained from her. These two cases in the B family received their milk from Mr. W of A, and while Mrs. B was ill, from Sept. 1, 1919, until Oct. 15, 1919, with supposed influenza, before her daughter, Alice B, was reported as having typhoid, milk bottles were being delivered and taken from her house.

Closer investigation brought out the fact that several other individuals to whom Mr. W delivered milk were ill at various times, and in each case the illness lasted for a period of time from several days to three weeks. The records at the city bacteriological laboratory showed that Widals had been done upon these cases, the physicians in charge evidently thinking of the possibility of typhoid. These Widals were all negative, but as they were all taken within a period of a week from the onset of the disease, it was too early to expect a positive Widal.

Mr. M, the last case reported, had two negative Widals, one Sept. 22, 1919, and the other Sept. 27, 1919. He was reported on Oct. 14, 1919, as a clinical case of typhoid fever.

Routine procedure in obtaining Widals from all those engaged in the production and handling of milk was carried out at Mr. W's farm. Widals were obtained from five individuals engaged in this work. Report from the State bacteriological laboratory states that these are all negative.

The above situation has brought out the following interesting points: —

1. The danger of mistaking typhoid for influenza.
2. The need of a more thorough understanding on the part of the medical profession that one negative Widal does not rule out the possibility of typhoid fever, especially if this Widal is performed within the first week or ten days of the disease.
3. The need of placarding houses where a case of typhoid fever exists as a warning to milkmen that such a house contains a communicable disease, and that no milk bottles should be removed until quarantine is lifted.
4. A stricter supervision over the washing and cleansing of milk bottles is advised.

SUGGESTED LIST OF BOOKS ON HYGIENE FOR THE TOWN LIBRARY.

By Harriet L. Wedgwood, R.N., Health Instructor.

If your library can make only a small expenditure at first, we suggest the following which we know to be good and which are chosen with a view to covering different phases of the subject. If you already have books on the various phases, the following, nevertheless, should be in your library: —

First List.

[All prices subject to change, and constantly changing.]

Phase of Hygiene Covered.	Author.	Title.	Publisher.	Price.
The family,	Betts, G. H.,	Fathers and Mothers,	Bobbs-Merrill, Indianapolis.	-
Prenatal hygiene,	Wheeler, Marianna,	Before the Baby Comes,	Harper's, 1900,	$2 00
Infant care,	Smith, Dr. Richard M., and Mrs. H. C. Green.	The Baby's First Two Years.	Houghton Mifflin, (Revised).	1 00
Preschool child,	West, Mrs. Max,	Child Care, Part I, The Preschool Child.	Children's Bureau, Dept. of Labor, Washington, D. C.	Free
School hygiene,	Hoag and Terman,	Health in the Schools,	Houghton Mifflin,	1 75
Child welfare problems.	Mangold,	Problems of Child Welfare.	Macmillan, 1919,	2 00
	Porter, Charles,	The Future Citizen and his Mother.	Houghton Mifflin,	1 75
Community health,	Hill,	The New Public Health.	Macmillan,	1 25
Sanitation,	Ritchie and Caldwell,	Primer of Hygiene,	World Book Co.,	52
Public health nursing,	Gardner,	Public Health Nursing,	Macmillan,	2 00
General reading,	Chapin, H. D.,	Health First,	Century Co.,	1 50
	Wald, Lillian D.,	House on Henry Street,	Holt,	2 50
	Adams,	The Health Master,	Houghton Mifflin,	1 35
	Devine,	Misery and its Causes,	Macmillan,	1 25
	O'Shea and Kellogg,	Health Habits,	Macmillan,	52

The above are fifteen books, covering a fair range, which should be in every library, and which may be considered a nucleus for books on hygiene. To these should be added the other publications of the Children's Bureau, the United States Public Health Service Bulletins, publications of the State Department of Public Health, and two or three good magazines dealing with current health topics, such as the "American Journal of Public Health," "Public Health Nurse," "School Life" (the official organ of the United States Bureau of Education, dealing to a considerable extent with health matters), and, if you can add another, "Journal of Industrial Hygiene."

If you can make a larger investment in books on hygiene than the fifteen named in the first list, we suggest the following. This list has been arranged to meet the needs of different groups of people, and therefore includes the books in the first list.

Second List.

FOR THE MOTHER AND THE FATHER OF THE FAMILY.

TITLE OF BOOK.	Author.	Publisher.	Price.
Fathers and Mothers,	Betts, G. H.,	Bobbs-Merrill, 1915,	$0 75
Prospective Mother,	Slemons, J. M,,	Appleton, 1912,	1 75
Before the Baby Comes,	Wheeler, M.,	Harper's, 1900,	2 00
Baby's First Two Years,	Smith, Richard M., and Mrs. H. C. Green.	Houghton Mifflin,	1 00
Care and Feeding of Children,	Holt, L. E.,	Appleton,	85
Primer of Sanitation,	Ritchie, John W.,	World Book Co., 1915,	50
Feeding the Family,	Rose, Mary Swartz,	Macmillan,	1 50
Clothing and Health,	Kinne and Cooley,	Macmillan,	72
Food and Health,	Kinne and Cooley,	Macmillan,	72
Hygiene of the School Child,	Terman, L. M.,	Houghton Mifflin,	2 00
Nervous Children: Prevention and Management.	Tucker, B. R.,	Badger, 1916,	1 25

FOR THE TEACHER.

Suggestions of Modern Science concerning Education (especially the lecture by Meyer).	Jennings, Watson, Meyer and Thomas.	Macmillan,	$1 20
Posture of School Children,	Bancroft,	Macmillan,	1 60
Mental Hygiene of Childhood,	White, Wm. A., M.D.,	Little, Brown,	1 35
Healthful Living (based on the essentials of physiology for high school pupils).	Williams, Jesse F.,	Macmillan, 1919,	1 20

FOR THE NURSE.

Outlines of Internal Medicine (for Nurses).	Farr,	Lea & Febiger,	$2 00
Public Health Nursing,	Gardner,	Macmillan,	2 00
Hygiene and Sanitation for Nurses.	Price,	Lea & Febiger,	1 75
Essentials of Medicine,	Emerson,	Lippincott,	2 50
Handbook for School Nurses,	Kelly and Bradshaw,	Macmillan,	1 25
The School Nurse,	Struthers,	Putnam's,	1 75
The Industrial Nurse,	Wright,	Macmillan,	1 25
The Tuberculosis Nurse,	La Motte,	Putnam's,	1 50
Organization of Public Health Nursing.	Brainerd,	Macmillan,	1 35
History of Nursing (4 vols.),	Nutting and Dock,	Putnam's,	10 00
Nursing Problems and Obligations.	Parsons, Sara E.,	Whitcomb & Barrows,	1 00

Second List — Continued.

FOR BOYS AND GIRLS.

TITLE OF BOOK.	Author.	Publisher.	Price.
Health Lessons, Books I and II,	Davison, Alvin,	American Book Co.,	-
Health Habits (and others in series).	O'Shea and Kellogg,	Macmillan,	$0 52
Child's Book of the Teeth (first of a series of Health Readers. Cartoons).	Ferguson, H. W.,	World Book Co.,	44
The Wonderful House that Jack Has.	Millard, C. N.,	Macmillan,	60
Milk Fairies (also dramatized version).	McCrillis,	Mrs. J. McCrillis, 57 Heath St., Winter Hill, Mass.	10
Child Health Alphabet (rhymes and tables of normal weight).	Peterson, Mrs. Frederick,	Child Health Organization; also Metropolitan Life Ins. Co., 1918.	Free
Any literature available on "Health Crusaders" (including a sheet of "Health Rules").	- -	National Tuberculosis Association, 381 Fourth Ave., New York. (If they have no booklets, they may have posters.)	Free

FOR THE SCHOOL COMMITTEE AND SUPERINTENDENT.

Educational Survey of the Public Schools of Brookline, Mass., (pp. 205-261, provisions for safeguarding health).	Van Sickle, director,	School Committee, Brookline, Mass.	Free
Health and Medical Inspection of School Children (probably the best book on medical inspection of school children).	Cornell, W. B.,	Davis, Philadelphia, 1912,	$3 00
Health First[1] (pp. 200, 201, program for rural school children).	Chapin, H. D.,	Century Co., 1917,	1 50
The Human Factor in Education (especially chapter touching on "Human Wastes").	Monroe, J. P.,	Macmillan, 1920,	1 60
Laggards in our Schools,	Ayres,	Survey Associates,	1 50
Medical Inspection of Schools,	Gulick and Ayres,	Survey Associates,	1 50
Open Air Crusaders (open-air schools; best equipment; this given in special pamphlet also).	Eliz. McCormick Memorial Fund.	Eliz. McCormick Memorial Fund, 315 Plymouth Ct., Chicago, Ill.	Free
Comparison of Open-air and Indoor Classes.[2]	Johnson, A. I.,	Teachers' College Record, 19, 352-368, September, 1918.	Free
Household Arts and School Lunches.	Boughton,	Russell Sage,	25
The Feeding of School Children,	Bulkley, M. E.,	G. Bell & Sons, London,	1 25
Euthenics: The Science of Controllable Environment.	Richards, Ellen H.,	Whitcomb and Barrows,	1 00

FOR EVERYBODY.

The Health Master (very good; interesting).	Adams,	Houghton Mifflin,	$1 35
Health First (the fine art of living).	Chapin,	Century Co., 1917,	1 50
The Modern Milk Problem,	MacNutt,	Macmillan,	2 00
The Newer Knowledge of Nutrition.	McCollum, E. V.,	Macmillan,	1 50

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[1] This book listed also under "Books for Everybody."

[2] This is not a book, but seems worth while to mention here.

Second List — Concluded.

FOR EVERYBODY — Concluded.

TITLE OF BOOK.	Author.	Publisher.	Price.
The Nursing Mother as a Factor of Safety in the Nutrition of the Young.	McCollum, E. V., and Simmonds, N.	Reprinted from American Journal of Physiology, 1918, Vol. 46, pp. 275-313.	-
Problems of Child Welfare,	Mangold,	Macmillan, 1919,	$2 00
The New Public Health,	Hill,	Macmillan,	1 25
Misery and its Causes,	Devine,	Macmillan,	1 25
The House on Henry Street,	Wald,	Henry Holt,	2 50
Industrial Medicine and Surgery (excellent; charts, medical inspection, etc.).	Mock,	W. B. Saunders Co., 1919,	10 00
American Public Health Protection.	Hemenway,	Bobbs-Merrill Co., Indianapolis,	1 25
A Layman's Handbook of Medicine.	Cabot, Richard,	Houghton Mifflin,	2 00
The Future Citizen and his Mother (an English book; well written; preface especially good).	Porter, Chas.,	Houghton Mifflin,	1 75
Principles of Sanitary Science and Public Health (sanitation).	Sedgwick,	Macmillan,	3 00
Psychology of Insanity (brief, concise, clear; good basis for study of mental hygiene).	Hart, Bernard,	G. P. Putnam's, 1919,	75
Nervousness: Its causes, treatment and prevention (No. 5 in the Mind and Health Series).	Emerson, L. E.,	Little, Brown,	1 35
What is Malnutrition?	Roberts,	Children's Bureau,	Free
Poverty and Riches,	Nearing, 1916,	Winston,	1 00
Races and Immigrants in America.	Commons, 1915,	Macmillan,	50
How to Live,	Fisher and Fisk, 1917,	Funk & Wagnalls,	1 00
First Aid in the Home,	Lynch,	Met. Life Ins. Co.,	Free
High Road to Health,	Kelly, Jas. E.,	Dodd, Mead & Co.,	1 75
Personal Hygiene,	Pyle,	W. B. Saunders,	1 75

ADDITIONAL, FOR SOCIAL WORKERS ESPECIALLY.

Social Work (relationship of doctor and social worker).	Cabot,	Houghton Mifflin,	$1 50
Social Insurance,	Rubinow,	Henry Holt & Co., 1916,	3 00
The Normal Family,[1]	Byington, Margaret F.,	The Annals of the American Academy of Political and Social Science, May, 1918, pp. 13-27.	-
Infant Mortality: Its Relation to Social and Industrial Conditions, 1916.	Hibbs, Henry, Jr.,	Russell Sage,	30

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[1] May have been reprinted.

The following are Children's Bureau publications which you should have. (Children's Bureau, Department of Labor, Washington, D. C. Miss Julia Lathrop, Chief.) These pamphlets can be obtained free of charge while the available supply lasts; after that, from the Superintendent of Documents, Washington, D. C., for a small sum.

Annual Reports (fiscal year ends June 30).

Care of Children Series.

No. 1. Prenatal Care. Mrs. Max West. 1915. Bureau Publication No. 4.
No. 2. Infant Care. Mrs. Max West. 1914. Bureau Publication No. 8.
No. 3. Child Care, Part I. The Preschool Age. Mrs. Max West. 1918. Bureau Publication No. 30.
No. 4. Milk. The Indispensable Food for Children. Dorothy Reed Mendenhall, M.D. 1918. Bureau Publication No. 35.

Dependent, Defective and Delinquent Classes Series.

No. 7. Mental Defect in a Rural County: A Medico-Psychological and Social Study of Mentally Defective Children in Sussex County, Del. Walter L. Treadway, and Emma O. Lundberg. 1918. Bureau Publication No. 48.

Infant Mortality Series.

No. 1. Baby-Saving Campaigns: A Preliminary Report on what American Cities are doing to prevent Infant Mortality. 1914. Bureau Publication No. 3. (Supply exhausted at Children's Bureau. May be purchased from Superintendent of Documents at 15 cents each.)
No. 2. New Zealand Society for the Health of Women and Children: An Example of Methods of Baby-Saving Work in Small Towns and Rural Districts. 1914. Bureau Publication No. 6.
No. 5. A Tabular Statement of Infant-Welfare Work by Public and Private Agencies in the United States. Etta R. Goodwin. 1916. Bureau Publication No. 16.
Nos. 4, 6, 7, 8 and 9 of this series comprise reports on field studies of infant mortality (based on births in one year) for cities of Montclair, N. J., Manchester, N. H., Waterbury, Conn., Brockton, Mass., and Saginaw, Mich., respectively.

Industrial Series.

No. 1. Child-Labor Legislation in the United States. Helen L. Sumner and Ella A. Merritt. 1915. Bureau Publication No. 10. (Bureau supply of complete volume — 1131 pages — exhausted, but reprints can be obtained of separate parts, as follows: Analytical Tables (475 pages, 2 charts), Separate No. 1; Text of Laws for Each State, Separates Nos. 2–54; Text of Federal Child-Labor Laws, Separate No. 55.)
No. 2. Administration of Child-Labor Laws. Three Parts (Employment-Certificate System in Various States): Part I, Sumner and Hanks. 1915. Bureau Publication No. 12. Part II, Sumner and Hanks. 1917. Bureau Publication No. 17. Part III, Bird and Merritt. 1919. Bureau Publication No. 41.
No. 3. List of References on Child Labor. 1916. Bureau Publication No. 18.

Rural Child-Welfare Series.

No. 1. Maternity and Infant Care in a Rural County in Kansas. Elizabeth Moore. 1917. Bureau Publication No. 26.
No. 2. Rural Children in Selected Counties of North Carolina. Frances Sage Bradley, M.D., and Margaretta A. Williamson. 1918. Bureau Publication No. 33.
No. 3. Maternity Care and the Welfare of Young Children in a Homesteading County in Montana. Viola I. Paridise. 1919. Bureau Publication No. 34. (This pamphlet has complete list, up to that date, of publications of Children's Bureau on indices cover pages.)
No. 4. Maternity and Infant Care in Two Rural Counties in Wisconsin. Sherbon and Moore. 1919. Bureau Publication No. 46.

Miscellaneous Series.

No. 1. The Children's Bureau. Circular containing text of law establishing Bureau and outline of plans for immediate work. 1912. Bureau Publication No. 1. (This is out of print.)
No. 2. Birth Registration. An aid in protecting the lives and rights of children. 1914. Bureau Publication No. 2.
No. 4. Child-Welfare Exhibits. Types and preparation. A. L. Strong. 1915. Bureau Publication No. 14.
No. 5. Baby-Week Campaigns (revised edition). 1917. Bureau Publication No. 15.
No. 6. Maternal Mortality from All Conditions connected with Childbirth in the United States and Certain Other Countries. Grace L. Meigs, M.D. 1917. Bureau Publication No. 19.
No. 7. Summary of Child-Welfare Laws passed in 1916. 1917. Bureau Publication No. 21.
No. 9. How to Conduct a Children's Health Conference. Bradley and Sherborn. 1917. Bureau Publication No. 23.
No. 12. An Outline for a Birth-Registration Test. 1919. Bureau Publication No. 54. Children's Year Leaflets.

Miscellaneous Series — *Concluded.*

No. 1. Children's Year, April 6, 1918, to April 6, 1919. 1918. Bureau Publication No. 36.
No. 5. Children's Health Centers. 1918. Bureau Publication No. 45.
No. 6. The Public Health Nurse: How she helps to keep the Babies well. 1918. Bureau Publication No. 49.
No. 7 and No. 8. Back-to-School Drive (No. 8, Suggestions to Local Committee). 1918. Bureau Publications Nos. 49 and 50, respectively.
No. 10. Advising Children in their Choice of Occupation, and Supervising the Working Child. 1919. Bureau Publication No. 53.
No. 11. The Visiting Teacher. 1919. Bureau Publication No. 66.

Child Labor Division Series.

No. 1. Aug. 14, 1917. Rules and Regulations for carrying out Provisions of United States Child-Labor Act (includes text of act).
No. 2. June 30, 1918. Decision of the United States Supreme Court as to Constitutionality of the Federal Child-Labor Law of Sept. 1, 1916.

Children's Year Follow-up Series.

No. 1. What is Malnutrition? Hundreds of Thousands of American Children are undernourished. Lydia Roberts. 1919. Bureau Publication No. 59.
No. 2. Save the Youngest. Seven charts on Maternal and Infant Mortality, with explanatory comment. 1919. Bureau Publication No. 61.

Legal Series.

No. 2. Illegitimacy Laws of United States. E. Freund. 1919. Bureau Publication No. 42.
No. 3. Maternity Benefit Systems in Certain Foreign Countries. Henry J. Harris. 1919. Bureau Publication No. 57.
No. 4. Laws relating to Mothers' Pensions in United States, Canada, Denmark, and New Zealand. Compiled by L. A. Thompson. 1919. Bureau Publication No. 63.

Conference Series.

No. 1. Standards of Child Welfare. A report of the Children's Bureau Conferences, May and June, 1919. Bureau Publication No. 60.

The following are pamphlet publications of the Bureau of Education, Washington, D. C., which have a bearing on health, and which should be included: —

TITLE.	Author.	Bulletin No.	Reference.
The Teaching of Community Civics.	Barnard, Carrier, Dunn and Kingsley.	1915, No. 23,	Pp. 20, 21. Suggested treatment of the elements of welfare. Topic I, Health.
School Hygiene,	Ryan, W. Carson, Jr.	1913, No. 48,	Report of the Fourth International Congress on School Hygiene at Buffalo, N. Y., Aug. 25–30, 1913.
Cardinal Principles of Secondary Education.	Kingsley, C. D., Chairman of Commission.	1918, No. 35,	Report of Commission on Reorganization of Secondary Education, appointed by National Educational Association. Page 11 gives Health as the first objective.
Organized Health Work in Schools.	Hoag, E. B., M.D.,	1913, No. 44,	Bibliography, charts, school nurse, etc.; and account of school hygiene in Minneapolis.
List of Publications of Bureau of Education, 1912 and 1913.	– –	Inside cover page of 1913, No. 44.	Organized health work in schools.
Bibliography of Medical Inspection and Health Supervision.	– –	1913, No. 16,	– –
Sanitary Schoolhouses,	– –	1913, No. 52,	Legal requirements in Indiana and Ohio.
The Health of School Children.	Compiled by W. H. Heck.	1915, No. 4,	Contributions from American Medical Journals, July, 1913, to July, 1914. Page 47 treats of Squint.

The Framingham (Mass.) Community Health and Tuberculosis Demonstration of the National Tuberculosis Association, Donald B. Armstrong, M.D., executive officer, has issued a series of monographs and other literature which it would be well to have on file.

Monograph:

No. 1, The Program, April, 1918.	Framingham, Mass., Community Health Station, Framingham Health Demonstration.
No. 2, The Sickness Census, June, 1918.	
No. 3, Vital Statistics, August, 1918.	
No. 4, Medical Examination Campaigns, November, 1918.	
No. 5, Tuberculosis Findings, March, 1919.	

Diagnostic Standards: Pulmonary Tuberculosis; Tuberculous Cervical Adenitis. Third edition, September, 1918. Framingham Health Demonstration.

What has the Demonstration done? Shall it be continued? October, 1919. Report of the committee on appraisal.

Health Administration in cities of Less than Twenty Thousand Population. D. B. Armstrong, M.D. Reprint from Journal of American Medical Association, Nov. 2, 1918, Vol. 71, pp. 1458–1462.[1]

Civilian Tuberculosis Control following War Conditions. D. B. Armstrong, M.D. Reprint from American Journal of Public Health, Vol. VIII, No. 12, Dec., 1918, pp. 897–903.[1]

Memoranda for Reference of Names and Addresses of Book Companies and Other Organizations getting out Books on Health Topics, and the General Line of Books issued on Health Matters.

Macmillan Co., 64 Fifth Avenue, New York.	Good Health Series of School Readers by O'Shea and Kellogg (4 vols. issued). Rural Science Series: Rural Hygiene, by Ogden. Posture of the School Child, by Bancroft. Series of Public Health Nursing Handbooks, Mary S. Gardner, General Editor. Other books on health subjects generally (Hill: The New Public Health, etc. See their catalogue under "Hygiene.")
Houghton Mifflin & Co., 4 Park St., Boston, Mass.	In Riverside Textbooks in Education Series, some books on Hygiene and Health Education in Schools (mainly by Terman, Hoag and Terman, and Andress, J. M.). A number of medical books, books on hygiene of body and of mind, medical research and human welfare. (See under "Hygiene" and "Medical Books" in classified index of their 1919 catalogue.)
American Book Co.,	A series of Health Lessons, by Alvin Davison.
World Book Co.,	A series of primers on Care of Teeth, Sanitation, etc., by various authors.
National Conference of Social Work, 315 Plymouth Ct., Chicago, Ill.	Write for their check list. There are a considerable number of pamphlets on health topics. Write for Health reports, addresses, discussions of Forty-fourth Annual Meeting of National Conference of Social Work, Pittsburg, Pa., June 6–13, 1917. Contains discussion of public health, public health nurse, infant mortality, economy in diet, etc.
Whitcomb & Barrows, Huntington Chambers, Boston, Mass.	Specialize in books on nursing and home economics. They have a combination for $5 (at present, February, 1920): Wright's Industrial Nursing, net $1.25; Hill's Cook Book for Nurses, 75 cents; Hawes' Observation of Symptoms, $1; MacKenzie, Standard Surgical Dressings, 30 cents; Stern & Spitz, Food for the Worker, $1; and Talbot, House Sanitation, 80 cents, which they recommend to any industry, and it seems a very good selection. They publish books on nursing and diet for invalids, occupation for invalids, books on cost of food, shelter, cleanness, food, etc.

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[1] May be obtained from Framingham Health Station.

Russell Sage Foundation, 130 East 22d St., New York.	Catalogue of Publications, 1919. Monographs; surveys; investigations on Child Labor, Child-placing, Health in the Schools, Trades and Workers, Community Centers, Cost of Living, School Buildings and Equipment, etc. Catalogue also has list of lantern slides available for lectures (some on health topics). Bibliographies (as No. 30, August, 1918, books on Child Welfare in War Time).
Survey Associates, 105 East 22d St., New York.	Write for Catalogue. Publishes books for Russell Sage Foundation.
Health Education Committee, 553 Little Bldg., Boston, Mass.	Write to them concerning health legislation.
National Organization for Public Health Nursing Publications, 156 Fifth Ave., New York.	Various pamphlets on health problems, — public health, health of mothers and children, diet lists, etc.
Metropolitan Life Insurance Co., New York.	Issue numerous health pamphlets, — All About Milk, First Aid in the Home, Food Facts, Teeth, Tonsils and Adenoids, etc. Circulars on contagious diseases, — measles, scarlet fever, etc. Mortality Statistics (including Mortality Statistics of Insured Wage Earners and Their Families, by Louis I. Dublin, 1911–16. Published, 1919, by M. L. I. Co.).
National Industrial Conference Board, 15 Beacon St., Boston, Mass.	Publish reports and statistical data relative to loss of time in industry due to sickness and other causes. (When investigation is finished.)
Massachusetts Department of Public Health.	Write to the State Department for its published literature (The Baby and You, diet lists and pamphlets, etc.); for bulletin of publications; for information concerning health legislation and proposed legislation; for available lectures, slides and moving-picture films; for its regular bulletin "The Commonhealth"; for information concerning contagious or in any way communicable diseases; for advice on any problem of health or sanitation.
United States Public Health Service.	Write for their Keep Well Series of pamphlets; for their Lectures on Social Hygiene for Nurses, 1919; for their regular bulletins on various phases of public health.
Lea & Febiger, 706 Sansom St., Philadelphia, Pa.	They publish a Nurses' Text-Book Series, including Parker's Materia Medica, Farr's Outlines of Internal Medicine, Bacon's Obstetrical Nursing, Fox's Bacteriology, Price's Hygiene and Sanitation, Amoss's Chemistry and Chemical Urinalysis, etc., and they have new books in preparation (including Eckman's Dietetics for Nurses and Foley's Public Health Nursing. Joslin's Diabetic Manual is also in preparation). They publish also Mouth Hygiene, a course of instruction for dental hygienists, a textbook compiled by Alfred C. Fones, D.D.S., of Bridgeport, Conn., where he has done special work in the public schools in mouth hygiene. They publish also a Manual of Practical Hygiene for students, physicians and health officers, by Harrington, revised by Mark Wyman Richardson, M.D., and other books on sanitation, communicable diseases, etc.
D. C. Heath & Co., Beacon St., Boston, Mass.	Their textbooks include texts on civics, economics, sociology and on physical training; also school texts on physiology and hygiene, and one on home and community hygiene (Brown).
Little, Brown & Co., 34 Beacon St., Boston, Mass.	They publish many books on cookery, on home economics in general, and domestic science for schools. They publish a Mind and Health series, which is very good. Teachers and nurses should be familiar with this series.
D. Appleton & Co., 29 West 32d St., New York.	They publish books on nursing, health, hygiene, first aid and household affairs. They publish Florence Nightingale's Notes on Nursing; Rosenau's Preventive Medicine and Hygiene; Doty's Good Health — How to Get it — How to Keep it; Holt's Care and Feeding of Children; Coolidge's Home Care of Sick Children; Burks and Burks' Health and the School; etc.

J. B. Lippincott Co,, 227 South 6th St., Philadelphia, Pa.	This company publishes nursing textbooks and books of interest to nurses.
C. V. Mosby Co., Metropolitan Building, St. Louis, Mo.	Publishers of nursing books.
G. P. Putnam's Sons, 2 West 45th St., New York.	Publishers of Cambridge (Eng.) Public Health Series (Cambridge University Press); medical books; and books on nursing (including Nutting and Dock's History of Nursing in 4 volumes, LaMotte's Tuberculosis Nurse, Pope's Medical Dictionary for Nurses, Struthers's School Nurse, etc.).
W. B. Saunders Co., Philadelphia, Pa.	Pyle's Personal Hygiene and books on nursing.
Dodd, Mead & Co., New York, .	Kelly's High Road to Health.

The town library should subscribe to at least one magazine on public health matters, and it should have several to which the public health nurse, the doctor and everybody else can refer. We suggest the following: —

Magazines and Current Publications.

The Public Health Nurse (monthly). National Organization for Public Health Nursing, 2157 Euclid Ave., Cleveland, Ohio. $2 per year.

The American Journal of Nursing (monthly). American Journal of Nursing Company, 19 West Main St., Rochester, N. Y. $2 per year.

The Journal of Industrial Hygiene (and abstract of the literature) (monthly). Journal of Industrial Hygiene, The Macmillan Company, 64–66 Fifth Ave., New York. $5 per year.

School Life. This magazine is most valuable. It is a teacher of health. You should not fail to subscribe for it. United States Bureau of Education. 50 cents per year.

American Journal of Public Health. This is the journal of the American Public Health Association. Most valuable. 169 Massachusetts Ave., Boston, Mass. $4 per year.

Mental Hygiene. This magazine as well as the bulletins of the National Committee for Mental Hygiene (same address), contains many articles which should be of interest to teachers especially, and also to nurses. 50 Union Sq., New York. $2 per year.

Journal of Outdoor Life. Not specially a health magazine, or to take the place of any of the above, but tends to make outdoor life and healthy activity attractive. 289 Fourth Ave., New York.

THE COMMONHEALTH.

MONTHLY BULLETIN OF THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

Sent Free to Any Citizen of the State.

MERRILL E. CHAMPION, M.D., DIRECTOR OF DIVISION OF HYGIENE, EDITOR.
Room 546, State House, Boston, Mass.

Boards of Health. — The present status of municipal boards of health may well offer a fruitful field for thought. Their ultimate status seems to be greatly in doubt in most States, yet the principle upon which they are founded is essentially sound.

It is in Massachusetts that the board of health, like the town meeting, has most persistently resisted change. The Massachusetts town is tenacious of its individuality. From the smallest to the greatest, insistence is laid upon the right to conduct its own affairs. The idea carries with it, too, a connotation of something sturdy and upstanding, smacking of true democracy. At its best this principle makes for self-reliance and real community interest. At its worst, it makes for mediocrity and wasteful overhead expense. It is a settled axiom of business that some enterprises are too small to be carried on economically.

It is a fair question whether this is not true of many of our local boards of health. Their appropriations are so very small that even if they were so minded they could not undertake anything of real importance for the improvement of the public health. This, in turn, reacts upon their prestige with the townsfolk, who judge them by what they accomplish. Moreover, the true legal authority of these boards has never been fully appraised. They are potentially powerful but actually weak.

Various factors have combined to prevent boards of health from taking their rightful position as guardians of the public weal. One is the persistence of antiquated theories as to the causation of disease. Another is the slow headway made in grasping the importance of prevention. Even to this day an overflowing cesspool looms as large in the eyes of much of the public, and of many boards of health, as does a child-welfare clinic. Placarding a house where diphtheria is present takes the place of school inspection to detect carriers of the disease, and to forestall the active case.

The new type of public health work requires more brains than the old. A higher type of citizen is needed on many boards of health. It is a common gibe that the board of health often consists of a doctor, a veterinary surgeon and an undertaker. What if it does? If the theory of town government means anything at all it means that the citizens elect three of their number to be responsible for the health of the community. Discretion and soundness of judgment are of more importance than anything else. Common sense would seem to require that at least one physician be on every board. Yet one of the best board of health men the writer has ever met was a veterinary surgeon, and some of the poorest have been physicians. The one had enthusiasm, public spirit and a level head; the others did not have these qualities.

Therefore we must come to the conclusion that if we are to have efficient boards of health, people must take them seriously, elect to them the highest type of citizen, and take some interest in their actions. Small communities, where money is scarce and overhead expense large, can advantageously pool their resources and choose a whole-time trained health officer, thus preserving the valuable old-time traditions of community responsibility, and yet, at the same time, taking advantage of the newer vision of efficiency.

Wood Alcohol. — The recent deaths in the Connecticut Valley, due to the ingestion of wood alcohol, has brought up several questions as to the liability of a recurrence.

It should be thoroughly understood that the sale of distilled liquor for beverage purposes is illegal, and all persons buying such liquor know that they are dealing with an illegal business, and, consequently, should be suspicious of the character of the liquor so bought. Such liquor is not under the direct control of the officers of the law or of any law-abiding person. The statutes provide for the sale by prescription of distilled liquor for medicinal purposes. All this liquor is subject to the careful control hitherto exercised over the sale of distilled liquor for beverage purposes, and the probability of such liquor containing anything injurious to health other than the alcohols which are naturally present is practically nil.

The State Department of Public Health has examined a large number of samples for the police departments during the past six months. In none of these samples of beer, wine, cider, whisky, etc., has any added poisonous substance or any wood alcohol been found. We can therefore expect that all liquor sold as prescribed by the statutes will conform with the provisions of the food and drug law, and will be no more dangerous to health than intoxicating liquors have been in the past.

There is, however, danger in the use of wood alcohol in the manufacture of bay rum, toilet preparations, medicines for external use, etc., over which there is, at present, no absolute legal control. The Department is requesting changes in the present laws which will require such preparations to be labeled with the words "POISON, NOT FOR INTERNAL USE," as required now for the sale of wood alcohol or of denatured alcohol. — H. C. L.

Maternal and Infant Mortality. — A problem which is being considered by many countries to-day is the question of how most effectively to reduce the increasingly high maternal and early infant mortality. This question is being considered by our Federal government and also by our State Legislature.

The problem in Massachusetts, in common with many other States, is a serious one, and is shown by the fact that the maternal mortality has increased 70.3 per cent in the past sixteen years, and the infant mortality under two weeks has not shown the satisfactory decrease that it has shown under one year. Approximately 41 per cent of the infant mortality under one year is due to infant deaths under one month.

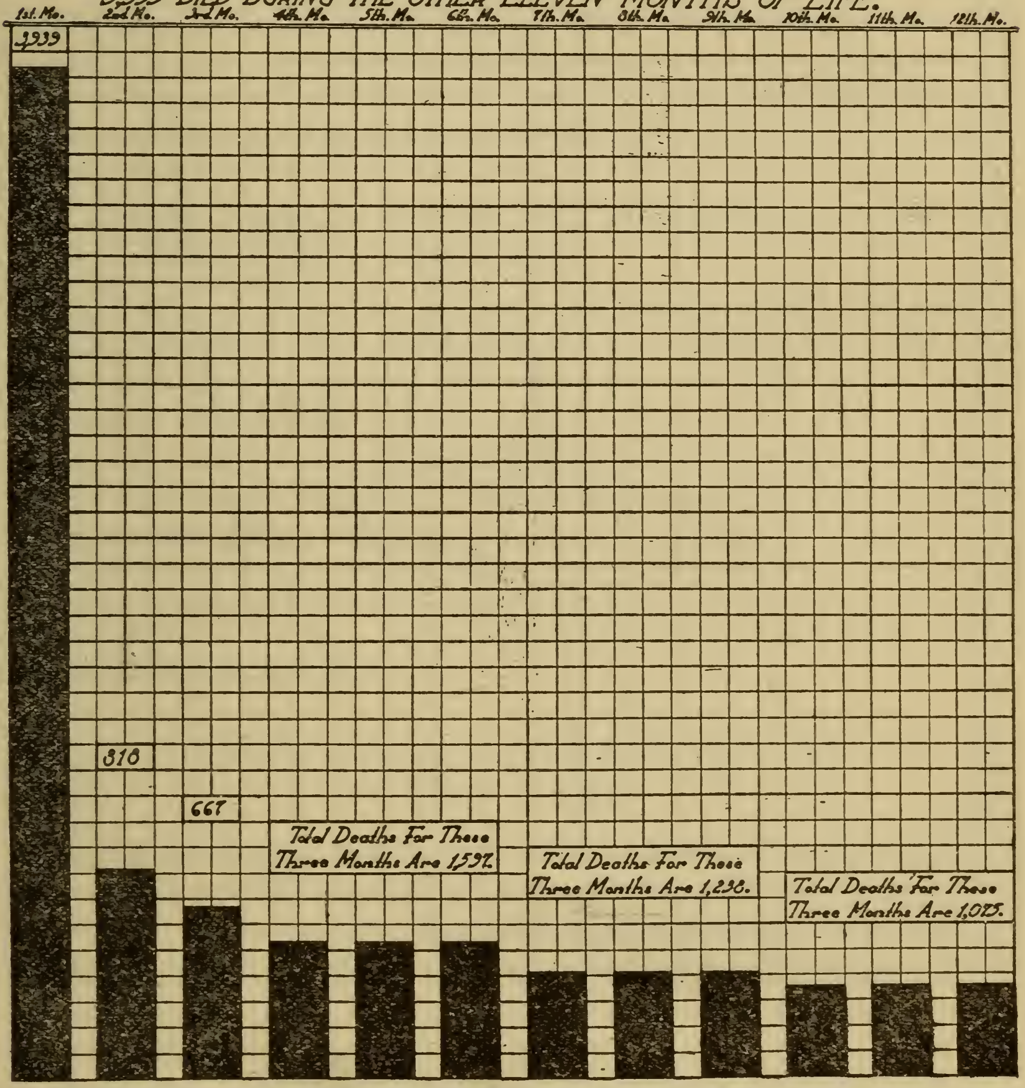
Accurate information concerning maternity must be obtained before any intelligent action can be taken toward reducing our present high maternal mortality. If the maternity benefit bill now before the Legislature becomes operative, this information necessary for intelligent action by the Health Department can be obtained through a uniform and complete system of records of all mothers cared for under the act. These records will not only provide data for constructive work by the Department, but will be of the greatest social and economic value in denoting the causes of our present high maternal mortality.

Any action which may decrease maternal and infant mortality, and give babies a chance for normal life, should be adopted and given a fair trial. — H. W.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

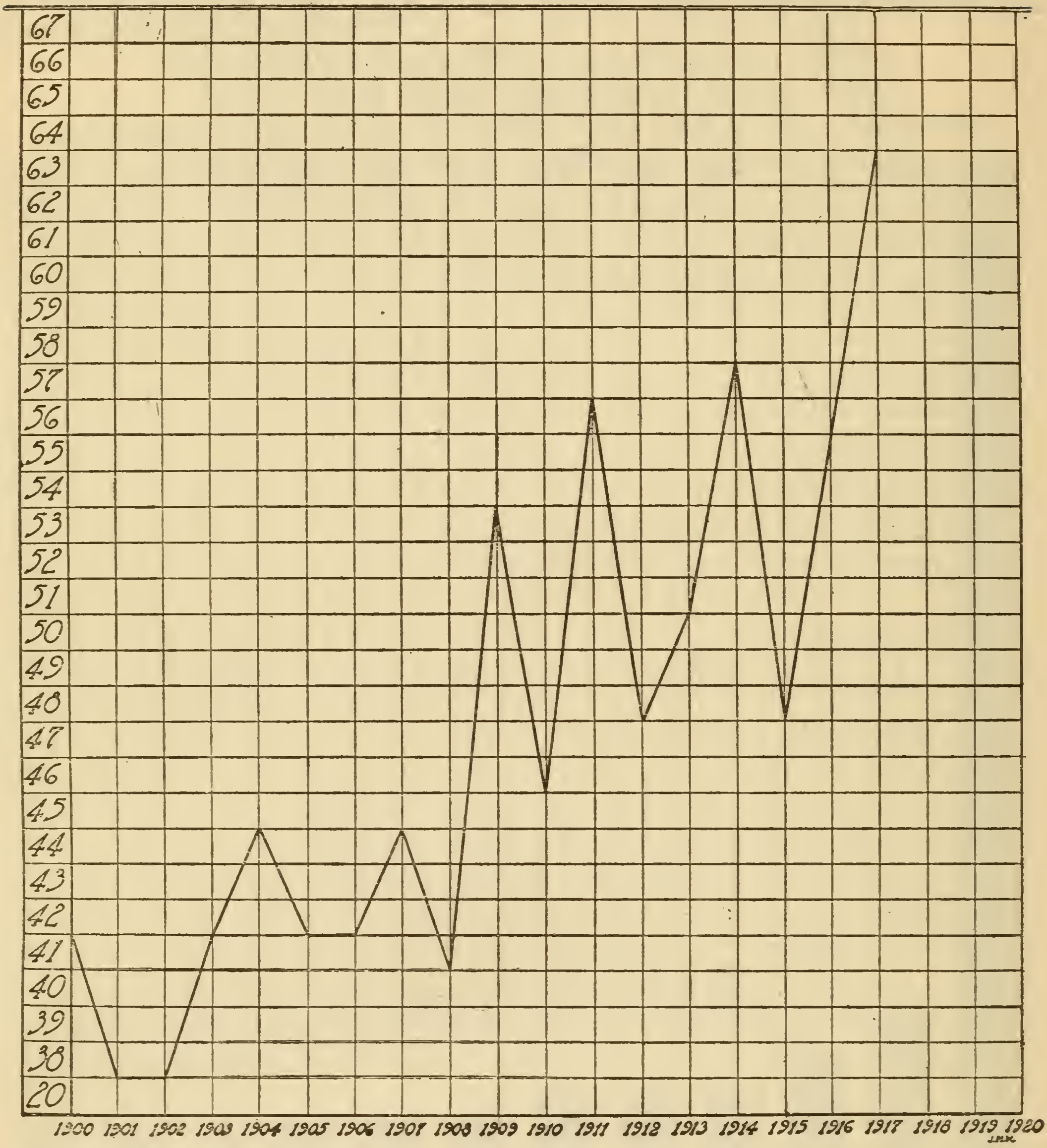
DEATHS UNDER ONE YEAR OF AGE, BY MONTHLY AGE GROUPS, IN MASSACHUSETTS.

TOTAL DEATHS UNDER ONE YEAR. (1916) 9,334.
3,939 BABIES DIED DURING FIRST MONTH OF LIFE IN MASSACHUSETTS.
5,595 DIED DURING THE OTHER ELEVEN MONTHS OF LIFE.



THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

MATERNAL DEATHS PER 10,000 LIVE BIRTHS IN MASS.—



PUBLIC HEALTH NOTES.

Dr. Sylvester Ryan of Springfield has been appointed a member of the Public Health Council of the State Department of Public Health.

Dr. William J. Gallivan has been appointed Director of the Division of Tuberculosis of the State Department of Public Health.

Mr. Hermann C. Lythgoe, Director of the Division of Food and Drugs, was elected president of the Association of Official Agricultural Chemists at their last annual meeting.

Dr. Benjamin White has been appointed Assistant Director of the Division of Biologic Laboratories, in charge of the Antitoxin and Vaccine Laboratory.

Dr. James A. Keenan, who has been Acting District Health Officer in the Berkshire District, has resigned.

The Belmont Community Nursing Association, which was organized in 1918, in addition to its other work is now operating two child welfare centers, and has two nurses, Miss Springer and Miss Burns, working regularly in this district.

A meeting was arranged by the Berkshire County Farm Bureau and held in Richmond January 7. Miss Willamay Tolland of the Farm Bureau gave a talk on "Clothing," and Miss Katherine Turner, nursing assistant to the District Health Officer, gave a talk on "Community Public Health Nursing." The town of Richmond has since made an appropriation for a nurse.

REPORT OF THE CONFERENCE OF THE EASTERN DISTRICT TUBERCULOSIS NURSES.

The first meeting of the Eastern District of the Tuberculosis Nurses' Conference for 1919 was held in the auditorium of the State House on Wednesday, December 10. There were present about 100 nurses, and all but 10 of the 43 tuberculosis dispensaries in the Eastern District were represented. Dr. B. W. Carey, Director of the Division of Communicable Diseases, opened the meeting and outlined briefly a few of the plans of the Department relative to tuberculosis work, with special reference to taking over the State sanatoria, and trying out later the plan of "traveling diagnosticians" in various parts of the State, similar to the method now in operation in Barnstable County.

Dr. E. R. Kelley, Commissioner of Public Health, also welcomed the nurses and briefly discussed with them some of their problems. He stated that the old job of seeing the patients before they enter the sanatoria, through the sanatoria, and after they return from the sanatoria is still the greatest, and he also emphasized the necessity of early hospitalization for the active cases and preventive work with the exposed children. As to the problem of how to keep the patients in the hospitals and sanatoria once they are there, Dr. Kelley suggested that possibly closer co-operation between superintendents of the sanatoria and the local nurses, with occasional visits by the nurses to the patients when they become dissatisfied, acting as a sort of go-between, might help to solve this difficulty.

The first paper by Mrs. Helen E. Berry, tuberculosis nurse in Somerville, on "Tracing Lost Tuberculosis Cases," gave an interesting account of the various agencies employed in Somerville, and the results obtained in tracing about 700 cases of tuberculosis reported to the Somerville Board of Health for a five-year period, very few of which were eventually not located. This paper was discussed by Miss Gertrude Martin, nursing assistant in the Wachusett District.

Miss Mary Leamy, tuberculosis worker in the Gardner Dispensary, in "Tuberculosis from the Viewpoint of the Social Service Worker," gave a most instructive account of the splendid results obtained in Gardner in their tuberculosis work, and possible in all communities, by co-ordination of all the official and unofficial agencies, especially the local manufacturers and business men, and by advertising. This paper was discussed by Mrs. Anna Hartnett, nursing assistant in the South Midland District.

Miss Margaret G. Weir, tuberculosis dispensary nurse in Beverly, read a very interesting paper on "Problems arising in Tuberculosis Work." The five problems enumerated — namely, the social and medical care of the new cases, the returned sanatoria cases, the bed cases, poor housing conditions, and the problems of relief — are the same problems that are constantly confronting every one engaged in tuberculosis work, and Miss Weir's outline of the method of procedure in each case was most helpful. It was discussed by Miss Cecelia Lemner, nursing assistant in the Eastern Health District.

The talk at the afternoon session on "How to find Tuberculosis" was by Dr. P. C. Bartlett, examining physician for the Framingham Community Health Demonstration. Finding tuberculosis has been and still is the big work in Framingham, and the marvelous results in locating the disease there may be traced to (1) looking up existing cases and sources, that is, reported cases, the ex-sanatorium and dispensary cases, and families where there have been deaths from tuberculosis, and establishing intimate friendly relations with them; (2) finding new or unknown cases, generally the worst source of infection, largely through a tactful exchange of confidences when visiting the known cases in follow-up work; and (3) interesting the community in health problems in general, and educating the people to have occasional physical examinations which not only make possible the detection of the early case, but also the old "arrested" case. The latter, in Dr. Bartlett's opinion, will really give the most trouble, unless followed up occasionally, by suddenly becoming active and infecting others.

Child Welfare Clinics.

Miss Margaret Diaz, Supervisor of the Board of Health Nurses in New Bedford, gives the following account of the child welfare clinics in that city: —

The New Bedford Board of Health, in July, 1919, voted to establish three child welfare stations to which mothers could bring children up to the age of five years for advice as to care, feeding, etc., and to which expectant mothers could come to consult nurses and physicians.

One of these stations was located in the heart of the industrial section of the North End, another in the South End, and the third in the center of the city, these conveniently serving the people most likely to make use of them.

The establishment of the clinics, followed the appointment of additional child welfare nurses, of whom five are now employed, each working in her own district. This allows three nurses in attendance at the North End clinic, and two at each of the others. A physician is assigned to each. At present there is one session of each clinic a week.

Announcement of the opening of the stations was made through the newspapers, and the nurses spread the information in their several districts.

The first clinic was opened July 24, and 27 attended. Owing to the difficulty of securing quarters, the other two were not in operation until nearly a month later.

In all, 45 clinics have been held, with a total attendance of 450. Of these, 300 were babies from three weeks to one year of age, and 150 from one year to five.

The clinics were intended primarily for well babies, not sick ones. The idea was to bring the mother in contact with a doctor, in whose advice she would have more confidence than in the nurses', and who could impress upon her the necessity of following the nurses' instructions. In this way the authority of the nurses is strengthened.

The doctor gives advice on feeding; where babies are under weight he prescribes a milk formula, and the nurse, in whose district the baby lives, goes to the house and instructs the mother how to prepare the same. Where a baby needs medical treatment the doctor so advises the mother, and suitable cases are referred to the clinics carried on by the Children's Aid Society, the City Mission, the orthopedic clinic, at St. Luke's hospital, and to other agencies prepared to care for them.

Originally the clinics were held in the morning, but this was found to be an inconvenient time, and they are now held in the afternoon.

Statistics which may be of interest are as follows: —

Total attendance,	450
Feeding advice,	175
Referred medical treatment,	36
Died,	2

In the month of July prenatal letters were sent as follows: English 4, Portuguese 2; in September, 21 letters, — English 6, Polish 1, French 1, Portuguese 13; in October, 44 letters, — English 7, Polish 3, French 2, Italian 1, Portuguese 31.

A few women have come to the clinics for prenatal instructions, but most of the work has been done in the homes.

Classes are to be formed in the vocational school evenings for the workers in the mills. An effort will be made to get women who expect to be confined to attend these classes.

With all public health forces working together for the education of these mothers, it is hoped that good results will be secured in better infant care and a decreased infant death rate.

Industrial Nursing.

The National Organization for Public Health Nursing meeting for this year will be held in Atlanta, Ga., April 9 to 17. They plan to form an Industrial Nursing Section, and are anxious that as many industrial nurses as possible will attend this meeting. The following notation from the national organization will give an idea of their plans for organizing such a section: —

There has been a definite expression of opinion recently among industrial nurses generally that there is need for uniform standards of service and for better preparation for their work. Employers are seeing similar needs. Industrial nursing is still a field for the pioneer nurse, who often takes up her work without thought of preparation other than a hospital training. She finds immediate need for a broader knowledge, which is often fairly easy to obtain if the way is pointed out.

The Industrial Nurses of the National Organization for Public Health Nursing plan to form an Industrial Nursing Section in the national organization at the meeting in Atlanta, Ga., April 9 to 17. The object of this section will be the formulation and maintenance of high standards for nursing service in industry. It is planned to make known to nurses throughout the country the opportunities for education for industrial nurses. Opportunities exist or may be developed in many large centers. The program will be of interest both to industrial nurses and to employers.

Qualified nurses are eligible to membership. Companies are eligible to corporate membership, and individual employers to sustaining membership. Associations of employers, of employers and workers, or of employees are eligible to corporate membership.

"The Public Health Nurse," a monthly magazine, is the official organ of the National Organization for Public Health Nursing. Subscription is included in membership.

All industrial nurses are urged to attend the Atlanta meeting, and employers of industrial nurses are urged to send nurses as representatives. If the nurse becomes an active member she will have a vote. In any case she will return to her duties with renewed energy and inspiration.

Report of Conference, Feb. 13, 1920.

On Friday, Feb. 13, 1920, at the request of the Division of Hygiene of the State Department of Public Health, the home demonstration agents of the Amherst Agricultural College Extension Service, together with representatives from the Vocational Department of the State Department of Education, met for an all-day conference with representatives from various divisions of the State Department of Public Health.

The object of the meeting was to give each department a better understanding of the activities of the others, and to bring about a closer co-operation in the future.

Three health films, including the one made especially for the State Department of Public Health, "The Priceless Gift of Health," were shown at the morning meeting. Dr. Champion, Director of the Division of Hygiene, presided at the afternoon meeting at which Miss Laura Comstock of the Amherst Agricultural Extension Service gave a short talk on the development of the Home Economics Extension Service, and discussed briefly the work of the home demonstration agents and their relation to the community. Dr. Eugene R. Kelley, Commissioner of Public Health, next outlined the scope of the State Department of Public Health, and discussed the work of each division.

Miss Pryor and Miss Kloss of the Department of Education also spoke briefly, after which several representatives from the different departments gave ten-minute talks on their special work.

The meeting closed with an expression of appreciation by Dr. Kelley of the work the home demonstration agents are doing, and a desire for closer co-operation in the future. Miss Laura Comstock expressed her appreciation of the co-operation of the Department of Public Health in the past, and her belief in even closer co-operation in the future.

REPORT OF DIVISION OF FOOD AND DRUGS.

During the months of November and December, 1919, samples were collected in 54 cities and towns.

There were 948 samples of milk examined, of which 112 were below the legal standard, 1 sample of skimmed milk below the legal standard, 14 samples of skimmed milk not marked, and 27 samples contained added water.

There were 410 samples of food examined, of which 175 were adulterated. These consisted of 1 sample of condensed milk and 2 samples of fish, all of which were decomposed; 14 samples of dried fruits which contained sulphur dioxide and were not properly labeled; 4 samples of flour, 3 of which contained dirt, and 1 contained yeast and mold spores; 121 samples of eggs, 4 of which were decomposed, 80 samples were cold storage not marked, and 37 samples were stale eggs sold as fresh eggs; 32 samples of sausage, 1 of which was decomposed, 29 samples contained starch in excess of 2 per cent, and 2 samples contained artificial coloring; and 1 sample of sausage color which contained coal tar dye.

One sample of drug was examined which was adulterated. This was a sample of bay rum low in alcohol.

The police departments submitted 213 samples of liquor for examination, 131 of which were above 1 per cent in alcohol. The police departments also submitted 14 samples of poisons for examination, 1 of which was strychnia, 5 morphine, 2 morphine sulphate, 1 cocaine, 1 cocaine hydrochloride, and 4 samples examined for poison with negative results.

There were 105 convictions for violations of the laws, $2,078.18 in fines being imposed.

Henry J. Penney of Melrose; William S. Noble, Samuel Bookless, Annie V. Jordan and William Palmer of Pittsfield; Leslie N. Philbrook of Sherborn; Wallace W. Spohr of Haverhill; Andrew Barbieri of Great Barrington; Joseph Braun and Samuel J. McCarthy of Springfield; and Sheehan Karam and Martin Yeziersky of Agawam were all convicted for violations of the milk laws. Leslie N. Philbrook of Sherborn and Andrew Barbieri of Great Barrington both appealed their cases. Jacob Hahn of Fall River; George Armenis and Charles Scoulikas on two counts, of Boston; Rood & Woodbury Company of Springfield; Economy Grocery Stores Company of Malden; Nathan B. Flood of North Adams; Abraham Roosov of Stoneham; Fred J. Walsh and William E. Caton of Lowell; and Andrew Balkis of Lynn were all convicted for violations of the food laws. Abraham Roosov of Stoneham appealed his case. Steiger Cox Company of Fall River was convicted for false advertising, and appealed the case. Andrew Brochn, Jules D. Roy and Markopulos Villeros of Amesbury; Kallel Abdalla of Great Barrington; Albert Bernard, John W. Coddaire, Leo E. Sansouci and Isadore M. Villeneave of Haverhill; Joseph Camara, Jacob Hahn, Aaron Packer, George Pineau, Joseph Placido, Louis Prayr, Nathan Tickaralsky, Gilbert Vaillancourt, Abraham Yoken and Samuel Goodman of Fall River; George Alaxakos, George Tournas, Costas Chachus, William Ansara, Anastais Argyropoulos, Michael Broutsas, Michael Drivas, George Ferris, Samuel Filler, Zissis Ganellas, James Giavis, Morris Ginsburg, George Gorgountgos, David Solomon and Andrew Stratigakis of Lowell; Morris Burg, Benjamin Keleyian and Benjamin Minas of Malden; Solomon Herbster, Alexander Korponian, Jassa Mousa, Christos Perdikes and Greveas Xenaphon of Peabody; Michael Bell, Massif Mitchell, Charles P. Moran, Harris Aaronson, Albert Nagelschmidt, Tony Polcaro and Morris Secundi of Pittsfield; Battiste Brigado, Morris Brod, Morris A. Cohen, Dinastrous Galatalie, Tony Grinaldi, John Kourlouris, Albert Lewis, Abraham Nadler, Vincenzo Pettazzoni, Frank Reich, Joseph Robinson, Isadore Solomon, Efin Soroka, Angelo Timpano, Romani Wycancki, Charles Yerian and H. L. Handy Company of Springfield; Armour & Co., on two counts; Harry Hark, Hyde Wheeler Company, J. R. Poole Company and Union Lobster Company of Boston; Dench & Hardy of South Boston; Morris & Co. of Chicago, Ill.; Roberts & Oak of Providence, R. I.; Henry Schoenberger, William Schoenberger and Leopold Schoenberger of New Haven, Conn.; and Michael Gavin of Stoneham were all convicted for violations of the cold-storage law. The case against Dench & Hardy was prosecuted by the United States Department of Agriculture.

Jacob Goldstein and Nicholas Mastronny of Springfield and Arthur N. Sumner of Norfolk were convicted for violations of the slaughtering laws.

There were 13 confiscations made, consisting of 600 pounds (2 carcasses) of beef affected with cholerine and emaciation, 50 pounds of decomposed beef, 16 pounds of tuberculous livers, 60 pounds of tainted pork, 250 pounds of unstamped pork, 10 pounds of decomposed pork sausage, 79 pounds of unstamped, immature veal, 120 pounds of tainted veal, 273 pounds of decomposed veal yearling, 60 pounds of decomposed venison, 3 pounds of tuberculous tongue, and 3,454 pounds of decomposed poultry.

In accordance with the Acts of 1910, chapter 272, the following is the list of articles of adulterated food collected in original packages from manufacturers, wholesalers or producers: —

Watered milk was obtained as follows: 1 sample, produced by Annie V. Jordan of Pittsfield; 8 samples, produced by William O. Jackson of Furnace; and 1 sample of skimmed milk not marked, produced by George H. Foster of Woburn.

Samples of dried fruits which contained sulphur dioxide, and were not properly labeled, were obtained as follows: 1 sample each from C. D. Cobb & Bros., Inc., and Cobb, Bates and Yerxa, both of Boston; The Atlantic and Pacific Tea Company, The Ginter Company, and John T. Connor Company, all of Malden; California Peach Growers, Inc., of California; Hagop Gooralishin of Lowell; and E. E. Gray Company of Waltham.

Samples of sausage which contained starch in excess of 2 per cent were obtained as follows: 1 sample each from Park Provision Company, Mohawk Provision Company, and A. E. Kramer, all of Boston; Hay Churchill of New Bedford; Frank Holt, Alex Gavriluk and Henry J. Furneaux, all of Lawrence; Union Provision Company of Melrose; John Eberwein of Pittsfield; Delicatessen, 319 Moody Street, Waltham; Boston Beef Company of Haverhill; Andrew Balkus of Lynn; Bridge Street Delicatessen, Cudahy Packing Company and Smith's Pork Store, all of Lowell.

Samples of sausage which were decomposed were obtained as follows: 1 sample each from Moses David of East Boston, and Holden Street Market of North Adams. One sample of sausage which contained coloring matter was obtained from The Mohican Market of Pittsfield.

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of October, 1919: 476,087 dozens of case eggs, 164,297 pounds of broken-out eggs, 1,710,708 pounds of butter, 522,266 pounds of poultry, 15,807 pounds of game, 2,518,749 pounds of fresh meat and fresh-meat products, and 3,302,001 pounds of fresh food fish.

There were on hand on Nov. 1, 1919, 11,880,750 dozens of case eggs, 521,379 pounds of broken-out eggs, and 16,525,092 pounds of butter.

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of November, 1919: 345,510 dozens of case eggs, 245,368 pounds of broken-out eggs, 1,000,596 pounds of butter, 1,700,263 pounds of poultry, 20,458 pounds of game, 5,928,485 pounds of fresh meat and fresh-meat products, and 3,239,656 pounds of fresh food fish.

There were on hand on Dec. 1, 1919, 8,673,220 dozens of case eggs, 547,606 pounds of broken-out eggs, and 12,825,452 pounds of butter.

REPORT UPON THE WORK OF THE BACTERIOLOGICAL LABORATORY FOR THE MONTHS OF NOVEMBER AND DECEMBER, 1919, AND JANUARY, 1920.

The following gives the number of bacteriological examinations made in the laboratory of the State Department of Public Health during the months of November and December, 1919, and January, 1920: —

	Number of Examinations.	Diagnosis.		Release.	
		Positive.	Negative.	Positive.	Negative.
Diphtheria, ...	8,353	600	5,130	747	1,876

	Number of Examinations.	Positive.	Negative.	Atypical.*
Tuberculosis, ...	984	244	740	
*Typhoid fever (Widal test), . .	322	93	217	12
Typhoid fever (culture test), . .	237	17	220	
Malaria, ...	12	–	12	
Gonorrhœa, ...	694	93	601	
Pneumonia, ...	173			
Miscellaneous, ...	114			

Total number of examinations made, 10,889.

QUARTERLY REPORT UPON THE DISTRIBUTION OF BIOLOGICAL PRODUCTS AND DIAGNOSTIC OUTFITS.

The following gives the total number of biological products and diagnostic outfits distributed by the State Department of Public Health during the three months ending Dec. 31, 1919: —

Biological Products.

Diphtheria antitoxin: —	
12,000 units (for the Boston City Hospital),	431 bottles.
6,000 units (for the Boston City Hospital),	149 bottles.
2,000 units (for the Boston City Hospital),	46 bottles.
12,000 units,	498 bottles.
6,000 units,	2,398 bottles.
3,000 units,	13,225 bottles.
1,000 units,	3,223 bottles.
Smallpox vaccine: —	
Capillary tubes,	30,544
Bulk,	8,000
Typhoid vaccine: —	
Ampoules,	1,830
Bulk,	2,275
Typhoid-paratyphoid vaccine: —	
Ampoules,	3,525
Bulk,	25,200
Paratyphoid vaccine: —	
Ampoules,	367
Antimeningitis serum,	1,008 bottles.
Silver nitrate solution,	15,470 ampoules.

Diagnostic Outfits.

Diphtheria culture outfits,	11,133
Tuberculosis sputum bottles,	1,472
Pneumonia outfits,	127
Widal outfits,	735
Typhoid culture outfits,	381
Malaria-gonorrhœa outfits,	748

RÉSUMÉ OF COMMUNICABLE DISEASES.

NOVEMBER, 1919.

General Prevalence.

There were 7,147 cases of communicable diseases reported during the month as compared with the total of 18,842 for the corresponding month last year. Of last year's figures, 14,750 cases were influenza cases, leaving but 4,092 cases, a smaller number than this year, when there were only 125 cases of influenza reported, to be deducted.

The increase in disease for November this year as compared with 1918 was chiefly in diphtheria, chicken pox, measles, scarlet fever and whooping cough.

An appreciable decrease occurred in pneumonia and influenza.

Compared with October, 1919, chicken pox, measles, mumps, scarlet fever and whooping cough showed marked increases.

Diphtheria incidence remained constant, and it seems as if this disease has reached its high point for the year, there being 983 cases in November compared with 992 in October. Investigations disclosed that parents allowed their children who were in quarantine to play with other children, and other children have accompanied their parents outside of their own city on shopping excursions. A method of following up quarantine by local boards of health should prove of value.

Chicken Pox. — This disease increased from 373 cases in October to 722 cases for the current month. A careful watch should be kept of cases in adults to isolate mild smallpox cases at once.

Measles. — This disease nearly doubled the previous month's cases, the totals being 562 for October and 1,039 for November.

Scarlet fever continued to increase, and wide-awake boards of health throughout the State are working to control the spread in their communities. Mild cases, cases unattended by a physician, and lack of public spirit in observing quarantine regulations by parents have been found as reasons for the continued prevalence of cases in many communities. It is a constant finding in investigations to come in contact with people complaining against quarantine regulations, and exposing neighbors' children to the disease that their own children have.

Typhoid Fever. — A welcome decrease from 155 cases in October to 81 cases for the current month will result in fewer deaths during the year than in previous years, and give Massachusetts another low mark in the typhoid death rate. The cases during the month have been found due to contact with a typhoid case in 3 cases, from unknown causes in 55 cases, 1 by contact with a typhoid bacilli carrier in the same family, 1 by milk infected by a "carrier," and information has not been received for the remaining 21 cases. Two of the cases infected by unknown causes received their infection without the State. The "carrier" was suspected by the Brookline Board of Health, and the bacillus typhosus was isolated from the feces by the State bacteriological laboratory.

Rare Diseases.

Anterior poliomyelitis was reported from Lynn, 1; Somerville, 1; Great Barrington, 1; Medford, 1; Newton, 1; total, 5.

Anthrax was reported from Hudson, 1; Somerville, 1; total, 2.

Dog bite was reported from Fall River, 7; Lunenburg, 1; total, 8.

Dysentery was reported from Westport, 2.

Epidemic cerebrospinal meningitis was reported from Boston, 9; Billerica, 1; Southampton, 1; New Bedford, 1; Gardner, 1; Leominster, 1; Arlington, 1; Framingham, 1; total, 16.

Leprosy was reported from Boston, 1.

Malaria was reported from Winthrop, 1; Dedham, 1; Newton, 1; Weymouth, 1; total, 4.

Septic sore throat was reported from Newburyport, 1; Brockton, 1; Waltham, 1; Dartmouth, 3; Cambridge, 1; Arlington, 1; Westford, 1; Boston, 3; total, 12.

Smallpox was reported from Gardner, 2.

Tetanus was reported from Fairhaven, 1; Somerville, 1; total, 2.

Trachoma was reported from Chelsea, 1; Northampton, 1; Lowell, 1; Somerville, 1; Boston, 4; total, 8.

Distribution.

All Communicable Diseases.

	November, 1919.	November, 1918.
Total cases (all causes),	7,147	18,842
Case rate per 100,000 population,	179.0	480.5

Certain Prevalent Diseases.

	November, 1919.	November, 1918.	Cities and towns noticeably exceeding their Median Endemic Indices.[1]
Diphtheria: —			Attleboro, (1) 23 Abington, (1) 8 Newton, (6) 19 Gloucester, (2) 19 Revere, (4) 15 Salem, (2) 26 Spencer, (0) 15 Westfield, (1) 24 Greenfield, (2) 10 Brockton, (12) 32 Everett, (9) 61 Lynn, (17) 50
Total cases,	983	332	
Case rate per 100,000 population,	24.6	13.6	
Measles: —			Boston, (133) 517 Cambridge, (7) 21 Dedham, (0) 24 Danvers, (0) 52 Townsend, (0) 75 Chicopee, (0) 14 New Bedford, (15) 163 Brockton, (2) 64
Total cases,	1,059	179	
Case rate per 100,000 population,	26.5	4.6	
Scarlet fever: —			Boston, (119) 218 Braintree, (0) 10 Bridgewater, (1) 12 Cambridge, (14) 24 Newton, (1) 20 Gloucester, (0) 28 Lawrence, (7) 35 Lowell, (9) 58 Framingham, (2) 16 Worcester, (19) 44 Leominster, (2) 16 Easthampton, (1) 15 Holyoke, (9) 21 Lynn, (9) 86
Total cases,	1,054	287	
Case rate per 100,000 population,	26.4	7.3	
Whooping cough: —			Boston, (65) 137 Cambridge, (12) 51 Newton, (0) 20 Colrain, (0) 22 Greenfield, (0) 34
Total cases,	670	216	
Case rate per 100,000 population,	16.8	5.5	
Tuberculosis, pulmonary: —			
Total cases,	458	525	
Case rate per 100,000 population,	11.5	13.4	
Tuberculosis, other forms: —			
Total cases,	55	45	
Case rate per 100,000 population,	1.4	1.1	

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[1] The median endemic index is obtained by arranging in arithmetical sequence the monthly totals of reported cases for the past five years, and selecting the middle figure. The numbers in parentheses after the names of each city and town indicate the median endemic index for that city or town; the numbers without parentheses indicate the cases reported during the current month.

December, 1919.

General Prevalence.

The total cases reported for each of the respiratory diseases during December showed an increase over the figures for the previous month.

This increase was marked in measles, scarlet fever, lobar pneumonia, mumps, whooping cough and chicken pox. Diphtheria was the only major disease that held its own, but the cases for October and November for this disease were already above the average number for these months.

Anthrax. — Three cases were reported, one of which was determined, by clinical symptoms and lack of laboratory evidence, not to be anthrax. One case was infected apparently by hides from China. The remaining case was brought into the State from Connecticut for hospital treatment. This patient believes he was infected by a shaving brush. No bacteriological confirmation could be carried out on the suspected brushes, as they had been burned. This patient had a very severe illness, and was given 220 cubic centimeters of anthrax serum at varying intervals, and recovered. The anthrax serum supplied by the Department of Public Health to physicians in the State is manufactured by the Federal Bureau of Animal Industry.

Diphtheria. — During the past three months the monthly total of diphtheria has remained practically stationary. Because of this apparent lull in the prevalence of diphtheria it rests with the local authorities and physicians in the State to diagnose, isolate and quarantine all mild and questionable cases of diphtheria. Once a quarantine has been placed, occasional supervision of the quarantined house should be exercised, to make sure that the quarantine is properly observed by the members of the household.

Influenza. — There were 147 cases as compared with 125 cases in November.

Measles. — The 2,603 cases reported more than doubled the total of 1,059 cases for November. The prevalence of this disease in 1919 exhibited the lowest morbidity rate for the disease since 1907.

Lobar Pneumonia. — The total of 441 cases reported for December compares favorably with the number of cases reported in previous years, and shows no undue increase in cases.

Scarlet Fever. — The monthly total of cases again increased, 1,392 cases occurring in December, an increase of 338 cases over the total of 1,054 for November. The disease assumed a widespread prevalence early in the fall in the eastern end of the State, and has now spread to the western end of the State, where many communities are feeling the effects of the disease for the first time in many years.

Typhoid Fever. — There were 53 cases of typhoid fever in the month. Fifteen cases have not yet been reported on, but of the remaining 38 cases, 2 received their infection from contact with a known clinical case, and 1 from contact with a typhoid bacilli carrier in the same house who had typhoid in 1915. There were 35 cases in which the source of infection is not known, 2 of which number received their infection outside the boundaries of the State.

Rare Diseases.

Anterior poliomyelitis was reported from Lowell, 1; Winthrop, 1; Needham, 1; total, 3.

Anthrax was reported from Canton, 1; Worcester, 1; Hudson, 1; total, 3.

Dog bite was reported from Fitchburg, 1; Templeton, 4; Fall River, 1; total, 6.

Actinomycosis was reported from Boston, 1.

Epidemic cerebrospinal meningitis was reported from Chelsea, 1; Woburn, 1; Springfield, 1; Watertown, 1; Lynn, 1; Boston, 1; Framingham, 1; Paxton, 1; Haverhill, 1; Hudson, 2; Wakefield, 1; Cambridge, 1; Westfield, 1; Lawrence, 1; New Bedford, 1; Salem, [illegible]; Fitchburg, 1; total, 18.

Malaria was reported from Boston, 1; Malden, 1; Brockton, 1; Northampton, 1; total, 4.

Septic sore throat was reported from Lowell, 2; Boston, 7; Newburyport, 2; Worcester, 1; Somerville, 1; Westford, 1; Brookline, 1; Newton, 1; Springfield, 1; Everett, 1; Brockton, 2; Quincy, 1; total, 21.

Smallpox was reported from Fall River, 2.

Trachoma was reported from Boston, 6; Attleboro, 1; Worcester, 1; total, 8.

Distribution.

All Communicable Diseases.

	December, 1919.	December, 1918.
Total cases (all causes),	10,473	46,867
Case rate per 100,000 population,	262.4	1,195.2

Certain Prevalent Diseases.

	December, 1919.	December, 1918.	Cities and Towns noticeably exceeding their Median Endemic Indices.[1]		
Diphtheria: —			Attleboro,	(1)	16
Total cases,	1,018	585	Fall River,	(18)	45
Case rate per 100,000 population,	25.5	14.9	Cambridge,	(38)	60
			Chelsea,	(8)	22
			Everett,	(12)	60
			Lynn,	(21)	63
			Salem,	(3)	57
			Milford,	(2)	12
			Westfield,	(5)	28
Measles: —			Fairhaven,	(1)	32
Total cases,	2,603	346	New Bedford,	(10)	309
Case rate per 100,000 population,	65.2	9.6	Boston,	(195)	874
			Brockton,	(2)	314
			Cambridge,	(25)	74
			Dedham,	(2)	124
			Easton,	(0)	28
			Franklin,	(0)	110
			Milton,	(0)	37
			Rockland,	(0)	30
			Danvers,	(0)	55
			Salem,	(4)	28
			Somerville,	(7)	40
			Watertown,	(0)	28
			Townsend,	(0)	50
			Chicopee,	(1)	27
			Holyoke,	(11)	80
Scarlet fever: —			Attleboro,	(3)	24
Total cases,	1,392	393	Boston,	(135)	300
Case rate per 100,000 population,	34.8	10.0	Newton,	(4)	47
			Quincy,	(3)	32
			Lynn,	(18)	110
			Salem,	(6)	29
			Lawrence,	(5)	48
			Lowell,	(11)	64
			Worcester,	(14)	53
			Springfield,	(17)	33
Typhoid fever: —					
Total cases,	53	44			
Case rate per 100,000 population,	1.3	1.1			
Whooping cough: —			Boston,	(101)	240
Total cases,	926	217	Cambridge,	(12)	115
Case rate per 100,000 population,	23.2	5.5	Dedham,	(0)	21
			Rockport,	(0)	20
			Shirley,	(0)	29
			Greenfield,	(2)	39
Tuberculosis, pulmonary: —					
Total cases,	503	527			
Case rate per 100,000 population,	12.6	13.4			
Tuberculosis, other forms: —					
Total cases,	68	41			
Case rate per 100,000 population,	1.7	1.0			

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[1] The median endemic index is obtained by arranging in arithmetical sequence the monthly totals of reported cases for the past five years, and selecting the middle figure. The numbers in parentheses after the names of each city and town indicate the median endemic index for that city or town; the numbers without parentheses indicate the cases reported during the current month.

INFLUENZA EPIDEMIC OF 1920.

Influenza invaded Massachusetts again in January. It apparently spread from the New York focus of the disease during the third week of January, and by the following week cases were reported from all sections of the State. There were 17,793 cases reported in January, and 38,305 cases in February.

An increase in lobar pneumonia cases occurred simultaneously with the appearance of influenza, though the "peak" of the disease followed a few days later than that of influenza.

The progress of the epidemic was rapid. Cases were first reported from the eastern section of the State, from whence it spread along the lines of travel to other sections. Several of the smaller communities, particularly where travel was restricted by weather conditions following the snowstorms, reported fewer cases than the urban centers. Exceptions to this were Cummington, Becket, Ashburnham and Royalston.

The weekly progress of the disease is given below: —

Week Ending —	Influenza Cases.	Lobar Pneumonia Cases.
January 10,	40	142
January 17,	54	145
January 24,	490	201
January 31,	5,076	308
February 7,	9,730	379
February 14,	10,727	583
February 21,	5,601	510
February 28,	2,376	312

There was a little uncertainty and confusion in the reporting of mild cases, so that this factor influenced the morbidity rate of some localities, increasing or decreasing this rate according to the activities of the local authorities in requesting physicians to report these cases. Most communities urged the reporting of mild cases, and this viewpoint seems the proper one, as it gave a proper indication of the prevalence of the disease. One fact must always be remembered with all diseases, — that mild cases may cause a fatal case.

The area in and about Needham, Concord, Lexington, Waltham and Belmont, had more cases in proportion to its population than other sections of the State. The area in the lower Merrimac valley, about Haverhill, West Newbury, Amesbury and Groveland, was another section where the epidemic was severely felt.

By March the epidemic had nearly disappeared. A more complete study of the spread of the disease will appear in a later bulletin.

Influenza this year was a much milder type of infection than that of the winter of 1918–19. The sudden onset, backache, fever, nausea, vomiting, headache, accompanied by a general weakness, were predominating symptoms. Occasionally prostration was marked, and epistaxis, intestinal symptoms and involvement of the lungs occurred.

The vaccines for prophylactic use and treatment that have been used have been apparently of no proven value. The use of human serum for convalescent patients has appeared in certain cases to be of value, but in other instances the result of its use has been discouraging.

The organism causing the initial attack of influenza is still in dispute. The belief that the Pfeiffer bacillus is a secondary infection, as are the pneumococcus and other pathogenic bacteria, is gaining weight. Certain Japanese investigators have determined the disease to be due to a filterable virus.

It is hoped that more light will be brought on the etiology of this disease, for until this factor is known, the work of health officials in epidemics of influenza is under a severe handicap.

REMINDERS FOR THE BUSY PHYSICIAN.

Do we always remember the following simple facts?

1. Remember — That most diseases are spread by direct contact with a sick case or indirectly through contact with discharges from a sick individual.

2. Remember — The diagnostic aid of a blood test (Widal) in typhoid fever.

3. Remember — That a sputum intermittently positive and negative is not uncommon.

4. Remember — That the early signs of tuberculosis are an unaccountable loss of weight, easy fatigue, cough, etc., and that early tuberculosis of the lungs may not manifest physical signs.

5. Remember — That cultures should be taken in every case of sore throat.

6. Remember — That cultures should be taken from the throats of all in contact with a case of diphtheria.

7. Remember — That every case of diphtheria should receive antitoxin EARLY.

8. Remember — That all contacts with diphtheria should receive an immunizing dose of antitoxin.

9. Remember — That the thorough medical man never diagnoses a sore throat upon inspection alone.

10. Remember — The subsidence of the temperature with the appearance of rash and the reappearance of temperature with the appearance of the pustular stage in smallpox.

11. Remember — That measles is most infectious in the coryzal stage, before the rash appears.

12. Remember — That the character of the spinal fluid and the staining reactions of the organisms in the fluid are important differential diagnostic points.

CASES AND DEATHS FROM DISEASES DANGEROUS

Line No.	Cities and Towns grouped in Order of Population.	Population estimated as of July 1, 1919.	19A Chicken Pox.		9 Diphtheria.		61A Ep. Cerebrospinal Meningitis.		19B German Measles.		10 Influenza.		92 Lobar Pneumonia.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1	Massachusetts, ...	3,991,969	97	–	529	**32**	19	**13**	14	–	225	**13**	142	**62**
2	Cities over 200,000.													
3	Boston, ...	808,442	23	–	166	**10**	9	**5**	3	–	58	**5**	58	**16**
4	Cities, 150,000–200,000.													
5	Worcester, ...	176,761	3	–	21	–	–	–	–	–	11	–	8	**5**
6	Cities, 100,000–150,000.	*687,463*	*16*	–	*84*	*6*	*4*	*4*	–	–	*41*	–	*27*	*10*
7	Fall River, ...	129,416	6	–	11	**1**	1	**2**	–	–	3	–	1	–
8	New Bedford, ...	120,438	–	–	12	–	–	**1**	–	–	4	–	1	**1**
9	Springfield, ...	114,792	3	–	8	–	–	–	–	–	5	–	5	**1**
10	Cambridge, ...	112,176	7	–	11	–	–	–	–	–	9	–	9	**2**
11	Lowell, ...	109,396	–	–	14	**1**	2	**1**	–	–	11	–	8	**5**
12	Lynn, ...	101,245	–	–	28	**4**	1	–	–	–	9	–	3	**1**
13	Cities, 50,000–100,000.	*478,422*	*10*	–	*43*	*2*	*2*	*2*	*3*	–	*44*	*4*	*16*	*9*
14	Somerville, ...	94,950	2	–	7	–	1	–	–	–	4	**2**	3	–
15	Lawrence, ...	93,933	5	–	10	**1**	–	–	–	–	3	–	6	**3**
16	Brockton, ...	66,824	1	–	10	**1**	–	**1**	1	–	4	–	–	**1**
17	Holyoke, ...	63,413	2	–	2	–	–	**1**	2	–	–	–	1	**1**
18	Haverhill, ...	53,940	–	–	7	–	–	–	–	–	22	**2**	3	–
19	Malden, ...	52,669	–	–	4	–	–	–	–	–	4	–	2	**2**
20	Chelsea, ...	52,663	–	–	3	–	1	–	–	–	7	–	1	**2**
21	Cities and Towns, 25,000–50,000.	*500,608*	*21*	–	*66*	*4*	–	–	*1*	–	*27*	–	*8*	*7*
22	Quincy, ...	47,433	–	–	6	**1**	–	–	–	–	3	–	–	–
23	Pittsfield, ...	45,907	–	–	2	–	–	–	1	–	–	–	2	–
24	Newton, ...	45,895	4	–	8	**2**	–	–	–	–	–	–	–	–
25	Salem, ...	42,292	2	–	14	–	–	–	–	–	–	–	1	–
26	Everett, ...	41,282	–	–	8	–	–	–	–	–	3	–	–	–
27	Fitchburg, ...	41,196	1	–	1	–	–	–	–	–	2	–	2	**1**
28	Brookline, ...	38,287	6	–	2	–	–	–	–	–	1	–	2	**2**
29	Taunton, ...	37,761	–	–	3	–	–	–	–	–	13	–	–	**2**
30	Medford, ...	36,702	1	–	2	–	–	–	–	–	1	–	1	**1**
31	Chicopee, ...	34,124	–	–	5	–	–	–	–	–	–	–	–	–
32	Waltham, ...	32,107	2	–	6	–	–	–	–	–	1	–	–	**1**
33	Revere, ...	31,035	–	–	8	**1**	–	–	–	–	3	–	–	–
34	Beverly, ...	26,587	5	–	1	–	–	–	–	–	–	–	–	–
35	Cities and Towns, 10,000–25,000.	*597,915*	*14*	–	*80*	*5*	*1*	*1*	*1*	–	*19*	*2*	*11*	*7*
36	Gloucester, ...	24,545	–	–	–	–	–	–	–	–	2	–	–	–
37	Northampton, ...	23,526	–	–	–	–	–	–	–	–	–	–	–	–
38	North Adams, ...	22,048	1	–	–	–	–	–	–	–	–	–	–	–
39	Peabody, ...	21,070	–	–	3	–	–	–	–	–	1	**1**	–	–
40	Westfield, ...	20,402	–	–	9	–	–	–	–	–	–	–	3	**1**
41	Attleboro, ...	20,386	1	–	3	–	–	–	–	–	2	–	–	–
42	Watertown, ...	19,579	–	–	2	–	–	–	–	–	1	–	–	–
43	Framingham, ...	18,310	–	–	3	–	1	**1**	–	–	–	–	–	–
44	Arlington, ...	18,004	–	–	1	–	–	–	–	–	1	–	–	–
45	Melrose, ...	17,860	1	–	–	–	–	–	–	–	–	–	–	–
46	Gardner, ...	17,786	1	–	–	–	–	–	–	–	1	–	2	**1**
47	Leominster, ...	17,701	1	–	–	–	–	–	–	–	–	–	–	–
48	Woburn, ...	17,336	–	–	7	**1**	–	–	–	–	1	–	1	–
49	Methuen, ...	16,161	–	–	–	**1**	–	–	–	–	–	–	1	–
50	Marlborough, ...	15,814	–	–	2	–	–	–	1	–	2	–	–	**1**
51	Newburyport, ...	15,614	–	–	–	–	–	–	–	–	–	–	–	**2**

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[1] Deaths are available for publication each month through the courtesy of the Secretary of the Com
and correction, these deaths, while approximately correct, are not absolutely complete.

TO THE PUBLIC HEALTH,[1] SEPTEMBER, 1919.

6		19C		38A		38B		7		28-29		30-35		1		38C		37		8		
Measles.		Mumps.		Ophthalmia Neonatorum.		Suppurative Conjunctivitis.		Scarlet Fever.		Tuberculosis, Pulmonary.		Tuberculosis, Other Forms.		Typhoid Fever.		Gonorrhœa.		Syphilis.		Whooping Cough.		
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Line No.
179	3	89	-	117	-	31	-	407	4	572	273	75	47	146	12	795	1	336	24	349	20	1
																						2
67	1	18	-	41	-	12	-	83	-	153	71	18	14	14	2	332	-	145	8	70	5	3
																						4
1	-	-	-	7	-	4	-	12	-	30	13	2	2	4	-	52	-	27	2	17	1	5
53	*2*	*18*	-	*38*	-	*11*	-	*65*	-	*125*	*45*	*33*	*9*	*39*	*5*	*131*	-	*46*	*3*	*75*	*4*	6
23	2	-	-	13	-	4	-	1	-	27	6	5	2	12	-	20	-	8	2	13	2	7
26	-	2	-	12	-	3	-	18	-	24	14	5	2	2	1	21	-	7	-	9	2	8
1	-	3	-	3	-	-	-	2	-	11	4	4	4	6	1	36	-	15	-	12	-	9
2	-	9	-	3	-	2	-	6	-	20	12	2	-	1	1	15	-	5	1	27	-	10
1	-	3	-	4	-	2	-	14	-	34	3	15	-	12	1	22	-	2	-	4	-	11
-	-	1	-	3	-	-	-	24	-	9	6	2	1	6	1	17	-	9	-	10	-	12
13	-	*10*	-	*20*	-	*2*	-	*51*	*3*	*60*	*33*	*9*	*4*	*9*	*2*	*89*	*1*	*49*	*1*	*24*	*4*	13
2	-	3	-	4	-	-	-	9	-	13	5	2	1	-	-	8	-	1	-	1	-	14
2	-	3	-	1	-	-	-	16	2	10	8	4	1	3	-	23	-	16	-	1	-	15
5	-	-	-	7	-	2	-	5	-	7	4	1	-	2	1	12	-	19	-	12	-	16
-	-	-	-	-	-	-	-	12	-	14	9	-	1	-	-	4	-	6	1	-	2	17
2	-	1	-	3	-	-	-	-	-	7	5	1	-	1	-	35	-	6	-	6	1	18
1	-	1	-	2	-	-	-	6	1	3	1	1	-	2	-	4	1	-	-	3	1	19
1	-	2	-	3	-	-	-	3	-	6	1	-	1	1	1	3	-	1	-	1	-	20
8	-	*8*	-	*4*	-	-	-	*64*	-	*73*	*24*	*6*	*5*	*23*	-	*58*	-	*18*	*3*	*37*	*2*	21
-	-	1	-	-	-	-	-	8	-	9	3	-	-	1	-	9	-	-	-	-	-	22
-	-	1	-	-	-	-	-	-	-	5	1	-	-	5	-	5	-	-	-	19	2	23
-	-	-	-	1	-	-	-	6	-	3	-	-	1	1	-	5	-	1	-	3	-	24
-	-	-	-	1	-	-	-	13	-	8	6	-	-	1	-	7	-	-	-	1	-	25
2	-	2	-	1	-	-	-	4	-	6	1	1	1	2	-	1	-	1	-	3	-	26
1	-	-	-	-	-	-	-	2	-	5	3	2	1	-	-	10	-	2	-	-	-	27
1	-	1	-	-	-	-	-	2	-	6	1	-	-	1	-	1	-	-	-	10	-	28
1	-	-	-	-	-	-	-	5	-	12	6	-	-	1	-	6	-	6	2	-	-	29
2	-	2	-	-	-	-	-	4	-	3	1	2	1	3	-	2	-	-	-	-	-	30
-	-	-	-	-	-	-	-	4	-	4	1	-	-	2	-	2	-	2	-	-	-	31
1	-	-	-	-	-	-	-	-	-	3	-	-	1	2	-	3	-	3	1	1	-	32
-	-	-	-	-	-	-	-	9	-	5	1	-	-	4	-	5	-	1	-	-	-	33
-	-	1	-	1	-	-	-	7	-	4	-	1	-	-	-	2	-	2	-	-	-	34
4	-	*15*	-	*6*	-	*2*	-	*70*	-	*74*	*28*	*2*	*4*	*36*	*2*	*60*	-	*25*	*3*	70	*2*	35
-	-	-	-	1	-	-	-	15	-	3	1	-	-	1	-	1	-	2	-	5	-	36
-	-	1	-	-	-	-	-	1	-	4	2	-	-	1	-	3	-	-	3	1	-	37
-	-	1	-	1	-	-	-	-	-	3	1	-	-	1	-	3	-	1	-	9	1	38
-	-	-	-	-	-	-	-	1	-	18	2	-	-	1	-	1	-	-	-	-	-	39
-	-	-	-	-	-	-	-	11	-	-	2	-	-	2	-	-	-	-	-	-	-	40
-	-	-	-	1	-	-	-	-	-	1	-	-	-	11	1	4	-	2	-	-	-	41
1	-	-	-	-	-	-	-	1	-	3	-	-	-	-	-	1	-	-	-	6	-	42
-	-	-	-	-	-	-	-	3	-	2	1	-	-	-	-	-	-	-	-	-	-	43
1	-	1	-	1	-	-	-	2	-	1	1	-	-	2	-	-	-	-	-	-	-	44
-	-	1	-	2	-	1	-	1	-	-	1	-	-	-	-	-	-	-	-	6	-	45
-	-	4	-	-	-	1	-	2	-	5	-	-	-	1	-	4	-	1	-	-	-	46
-	-	-	-	-	-	-	-	1	-	1	2	-	-	-	-	6	-	1	-	-	-	47
-	-	1	-	-	-	-	-	-	-	3	-	-	1	2	-	5	-	-	-	-	-	48
-	-	2	-	-	-	-	-	1	-	2	1	-	-	-	-	2	-	-	-	-	-	49
-	-	-	-	-	-	-	-	1	-	2	-	-	-	3	-	-	-	-	-	2	-	50
-	-	-	-	-	-	-	-	1	-	1	-	-	-	1	-	1	-	-	-	4	-	51

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monwealth. Owing to the delay by physicians in returning death certificates sent them for addition

CASES AND DEATHS FROM DISEASES DANGEROUS

Line No.	CITIES AND TOWNS GROUPED IN ORDER OF POPULATION.	Population estimated as of July 1, 1919.	19A Chicken Pox.		9 Diphtheria.		61A Ep. Cerebrospinal Meningitis.		19B German Measles.		10 Influenza.		92 Lobar Pneumonia.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
52	Southbridge,	15,580	–	–	–	–	–	–	–	–	–	–	–	–
53	Winthrop,	14,968	1	–	2	1	–	–	–	–	1	–	1	2
54	Weymouth,	14,874	–	–	–	–	–	–	–	–	–	–	–	–
55	Greenfield,	14,466	–	–	–	–	–	–	–	–	–	–	1	–
56	Milford,	14,214	6	–	6	–	–	–	–	–	2	–	–	–
57	Wakefield,	13,939	–	–	–	–	–	–	–	–	–	–	–	–
58	Plymouth,	13,587	–	–	1	–	–	–	–	–	–	–	–	–
59	Norwood,	13,472	–	–	3	–	–	–	–	–	–	–	1	–
60	Webster,	13,453	–	–	–	–	–	–	–	–	–	–	–	–
61	Adams,	13,378	–	–	2	–	–	–	–	–	–	–	–	–
62	Clinton,	13,289	–	–	1	–	–	–	–	–	1	–	1	–
63	West Springfield,	13,119	–	–	–	–	–	–	–	–	–	1	–	–
64	Danvers,	12,663	2	–	2	–	–	–	–	–	–	–	–	–
65	Dedham,	12,524	–	–	2	–	–	–	–	–	1	–	–	–
66	Natick,	12,175	–	–	–	–	–	–	–	–	–	–	–	–
67	Saugus,	12,061	–	–	5	–	–	–	–	–	2	–	–	–
68	Easthampton,	10,956	–	–	1	–	–	–	–	–	–	–	–	–
69	Athol,	10,831	–	–	8	2	–	–	–	–	–	–	–	–
70	Bridgewater,	10,807	–	–	16	–	–	–	–	–	–	–	–	–
71	Winchester,	10,590	–	–	1	–	–	–	–	–	–	–	–	–
72	Braintree,	10,417	–	–	–	–	–	–	–	–	–	–	–	–
73	Belmont,	10,219	–	–	–	–	–	–	–	–	1	–	–	–
74	Palmer,	10,191	–	–	–	–	–	–	–	–	–	–	–	–
75	TOWNS, 5,000-10,000.	*342,000*	*7*	–	*36*	*1*	*2*	*1*	*2*	–	*8*	–	*7*	*5*
76	TOWNS, 2,500-5,000.	*188,565*	*1*	–	*23*	*1*	*1*	–	*4*	–	*13*	*1*	*3*	*1*
77	TOWNS UNDER 2,500.	*211,793*	*2*	–	*10*	*3*	–	–	–	–	*3*	*1*	*3*	*1*
78	STATE INFIRMARY,	–	–	–	–	–	–	–	–	–	*1*	–	–	*1*
79	CAMP DEVENS,	–	–	–	–	–	–	–	–	–	–	–	*1*	–

In addition to the above there occurred 4 cases of anthrax, 1 in Boston, 1 in Chelsea, 1 in Peabody and
6 cases of dysentery, 2 in Boston, 1 in Brookline, 1 in Cambridge and 2 in Quincy, with 4 deaths, 1 in Aga
1 in Lexington and 1 in Northbridge; 9 cases of anterior poliomyelitis, 2 in Boston, 1 in Fall River, 1 in
1 in Chelmsford and 1 in Lowell; 18 cases of septic sore throat, 1 in Arlington, 1 in Boston, 1 in Cambridge,
ville, 1 in Wareham, 1 in Wayland and 1 in Woburn, with 5 deaths, 1 in Cambridge, 1 in Lowell, 2 in New
ville and 1 in Worcester, with 3 deaths, 1 in Boston, 1 in Franklin and 1 in Pittsfield; and 6 cases of

TO THE PUBLIC HEALTH — Concluded.

6		19C		38A		38B		7		28-29		30-35		1		38C		37		8		
Measles.		Mumps.		Ophthalmia Neonatorum.		Suppurative Conjunctivitis.		Scarlet Fever.		Tuberculosis, Pulmonary.		Tuberculosis, Other Forms.		Typhoid Fever.		Gonorrhœa.		Syphilis.		Whooping Cough.		
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Line No.
-	-	-	-	-	-	-	-	-	-	1	-	-	-	4	-	3	-	-	-	-	-	52
-	-	1	-	-	-	-	-	-	-	3	-	-	-	-	-	4	-	1	-	-	-	53
-	-	-	-	-	-	-	-	3	-	5	-	1	-	-	-	1	-	2	-	-	-	54
1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	19	-	55
-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	1	-	1	-	-	-	56
-	-	-	-	-	-	-	-	6	-	2	-	1	-	-	-	1	-	-	-	-	-	57
-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	58
-	-	-	-	-	-	-	-	3	-	-	2	-	1	-	1	-	-	-	-	-	-	59
-	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-	4	-	-	-	-	-	60
-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	1	-	-	-	61
-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	5	-	1	-	2	-	62
-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	63
-	-	1	-	-	-	-	-	3	-	-	2	-	1	-	-	-	-	7	-	-	-	64
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	8	-	65
-	-	-	-	-	-	-	-	2	-	-	1	-	-	-	-	1	-	-	-	-	-	66
1	-	-	-	-	-	-	-	2	-	-	1	-	-	-	-	1	-	-	-	-	-	67
-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	68
-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	69
-	-	-	-	-	-	-	-	5	-	4	1	-	-	3	-	1	-	2	-	4	-	70
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1	71
-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	2	-	-	-	-	-	72
-	-	2	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	73
-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	74
16	-	*17*	-	-	-	-	-	*32*	-	*33*	*17*	*2*	*3*	*12*	-	*28*	-	*18*	*3*	*18*	*1*	75
3	-	*3*	-	-	-	-	-	*16*	-	*13*	*6*	-	*1*	*4*	-	*21*	-	*3*	*1*	*13*	*1*	76
14	-	-	-	*1*	-	-	-	*13*	*1*	*9*	*23*	*1*	*4*	*5*	*1*	*8*	-	*1*	-	*22*	-	77
-	-	-	-	-	-	-	-	-	-	*2*	*13*	*2*	*1*	-	-	*3*	-	*1*	-	*3*	-	78
-	-	-	-	-	-	-	-	*1*	-	-	-	-	-	-	-	*13*	-	*3*	-	-	-	79

1 in Salem, with 1 death in Peabody; 3 cases of dog bite, 1 in Dartmouth, 1 in Lowell and 1 in Taunton;
wam, 1 in Bellingham, 1 in Provincetown and 1 in Sterling; 5 cases of malaria, 1 in Barre, 2 in Boston,
Holyoke, 1 in North Adams, 1 in Palmer, 1 in Revere, 1 in Swampscott, and 1 in Weymouth, with 2 deaths,
1 in Fall River, 1 in Haverhill, 4 in Lowell, 1 in Medford, 2 in New Bedford, 2 in Newburyport, 1 in Somer-
buryport and 1 in Sandwich; 5 cases of tetanus, 1 in Barnstable, 1 in Franklin, 1 in Pittsfield, 1 in Somer-
trachoma, 4 in Boston, 1 in Cambridge and 1 in Northampton.

CASES AND DEATHS FROM DISEASES DANGEROUS

Line No.	Cities and Towns grouped in Order of Population.	Population estimated as of July 1, 1919.	19A Chicken Pox.		9 Diphtheria.		61A Ep. Cerebrospinal Meningitis.		19B German Measles.		10 Influenza.		92 Lobar Pneumonia.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1	Massachusetts,	3,991,969	373	–	992	57	14	9	33	–	199	23	240	105
2	Cities over 200,000.													
3	Boston,	808,442	72	–	255	14	7	3	–	–	47	5	95	34
4	Cities, 150,000–200,000.													
5	Worcester,	176,761	6	–	57	–	–	–	1	–	7	–	4	5
6	Cities, 100,000–150,000.	*687,463*	*46*	–	*187*	*13*	*3*	*2*	*13*	–	*22*	*3*	*38*	*15*
7	Fall River,	129,416	3	–	17	–	1	1	1	–	3	–	2	–
8	New Bedford,	120,438	–	–	16	4	–	–	1	–	–	–	4	2
9	Springfield,	114,792	18	–	13	4	–	–	1	–	2	–	9	3
10	Cambridge,	112,176	10	–	28	1	–	–	5	–	7	–	11	7
11	Lowell,	109,396	4	–	28	2	1	1	–	–	2	1	6	2
12	Lynn,	101,245	11	–	85	2	1	–	5	–	8	2	6	1
13	Cities, 50,000–100,000.	*478,422*	*36*	–	*91*	*6*	–	–	*6*	–	*27*	*5*	*40*	*16*
14	Somerville,	94,950	7	–	16	–	–	–	2	–	1	1	13	9
15	Lawrence,	93,933	8	–	14	–	–	–	1	–	1	1	12	5
16	Brockton,	66,824	17	–	6	1	–	–	1	–	2	–	–	–
17	Holyoke,	63,413	1	–	5	–	–	–	1	–	1	–	–	–
18	Haverhill,	53,940	–	–	26	4	–	–	–	–	19	2	7	1
19	Malden,	52,669	–	–	14	1	–	–	–	–	1	1	1	–
20	Chelsea,	52,663	3	–	10	–	–	–	1	–	2	–	7	1
21	Cities and Towns, 25,000–50,000.	*500,608*	*32*	–	*175*	*14*	–	–	*5*	–	*24*	*2*	*23*	*14*
22	Quincy,	47,433	–	–	16	–	–	–	2	–	3	–	3	1
23	Pittsfield,	45,907	1	–	–	–	–	–	–	–	4	–	6	4
24	Newton,	45,895	2	–	8	2	–	–	1	–	2	–	–	1
25	Salem,	42,292	1	–	27	5	–	–	–	–	1	–	1	–
26	Everett,	41,282	–	–	60	4	–	–	–	–	3	–	3	2
27	Fitchburg,	41,196	–	–	4	–	–	–	–	–	–	–	–	–
28	Brookline,	38,287	19	–	3	–	–	–	–	–	1	–	2	–
29	Taunton,	37,761	–	–	8	–	–	–	2	–	–	1	3	5
30	Medford,	36,702	1	–	8	1	–	–	–	–	–	–	1	1
31	Chicopee,	34,124	2	–	6	–	–	–	–	–	–	–	2	–
32	Waltham,	32,107	3	–	16	–	–	–	–	–	6	–	–	–
33	Revere,	31,035	–	–	13	1	–	–	–	–	3	1	2	–
34	Beverly,	26,587	3	–	6	1	–	–	–	–	1	–	–	–
35	Cities and Towns, 10,000–25,000.	*597,915*	*95*	–	*125*	*8*	*1*	*1*	*5*	–	*29*	*3*	*24*	*6*
36	Gloucester,	24,545	–	–	18	1	–	–	–	–	1	–	–	–
37	Northampton,	23,526	1	–	8	–	–	–	–	–	1	–	–	–
38	North Adams,	22,048	4	–	1	–	–	–	–	–	–	–	–	–
39	Peabody,	21,070	2	–	3	–	–	–	–	–	–	–	1	–
40	Westfield,	20,402	1	–	13	1	–	–	–	–	–	–	1	–
41	Attleboro,	20,386	9	–	4	1	1	1	–	–	–	–	2	–
42	Watertown,	19,579	4	–	–	–	–	–	–	–	–	–	–	–
43	Framingham,	18,310	–	–	–	–	–	–	–	–	–	–	1	1
44	Arlington,	18,004	–	–	4	–	–	–	–	–	1	–	–	–
45	Melrose,	17,860	–	–	–	–	–	–	–	–	–	–	–	–
46	Gardner,	17,786	3	–	–	–	–	–	–	–	–	–	1	1
47	Leominster,	17,701	13	–	–	–	–	–	–	–	3	–	1	–
48	Woburn,	17,336	–	–	1	–	–	–	–	–	–	–	–	–
49	Methuen,	16,161	2	–	1	–	–	–	–	–	1	–	1	–
50	Marlborough,	15,814	11	–	2	–	–	–	1	–	1	–	1	–
51	Newburyport,	15,614	–	–	1	1	–	–	–	–	1	–	1	–

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TO THE PUBLIC HEALTH,[1] OCTOBER, 1919.

6		19C		38A		38B		7		28-29		30-35		1		38C		37		8		
Measles.		Mumps.		Ophthalmia Neonatorum.		Suppurative Conjunctivitis.		Scarlet Fever.		Tuberculosis, Pulmonary.		Tuberculosis, Other Forms.		Typhoid Fever.		Gonorrhœa.		Syphilis.		Whooping Cough.		
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Line No.
563	8	281	1	121	–	24	–	788	8	569	267	62	46	154	16	785	–	288	21	367	10	1
																						2
255	1	54	–	28	–	10	–	111	1	221	63	24	16	19	3	320	–	126	5	63	3	3
																						4
2	–	1	–	15	–	1	–	34	–	20	9	–	1	16	–	43	–	26	1	8	1	5
126	*5*	*41*	–	*45*	–	*8*	–	*165*	*1*	*99*	*63*	*13*	*10*	*17*	*3*	*145*	–	*47*	*5*	*94*	*2*	6
35	4	1	–	7	–	4	–	4	–	15	12	2	2	4	–	22	–	9	3	11	1	7
76	1	1	–	18	–	1	–	15	–	30	12	5	4	1	1	19	–	18	–	6	–	8
4	–	1	–	11	–	–	–	18	–	13	10	2	2	3	1	34	–	9	–	26	–	9
7	–	29	–	2	–	2	–	27	–	20	12	3	1	2	–	24	–	2	–	46	1	10
1	–	6	–	6	–	1	–	38	1	14	12	–	1	3	1	21	–	5	1	–	–	11
3	–	3	–	1	–	–	–	63	–	7	5	1	–	4	–	25	–	4	1	5	–	12
66	–	*44*	–	*13*	–	*2*	–	*91*	*1*	*59*	*26*	*8*	*4*	*6*	*1*	*88*	–	*29*	*1*	*22*	–	13
2	–	2	–	2	–	–	–	22	–	12	2	1	–	1	–	11	–	–	–	7	–	14
–	–	2	–	1	–	1	–	26	–	11	8	2	2	–	–	22	–	11	–	1	–	15
56	–	–	–	3	–	–	–	9	–	9	1	2	1	–	–	13	–	1	–	9	–	16
1	–	–	–	2	–	–	–	17	1	3	6	–	–	–	–	8	–	5	–	–	–	17
5	–	1	–	2	–	–	–	9	–	13	3	–	–	3	–	28	–	10	–	4	–	18
1	–	17	–	1	–	–	–	4	–	5	2	1	–	1	1	2	–	2	–	1	–	19
1	–	22	–	2	–	1	–	4	–	6	4	2	1	1	–	4	–	–	1	–	-	20
13	–	*33*	–	*6*	–	*1*	–	*119*	*3*	*64*	*31*	*6*	*5*	*24*	*3*	*60*	–	*17*	*3*	*42*	*2*	21
3	–	3	–	1	–	–	–	14	–	11	3	–	–	1	–	5	–	1	–	2	–	22
–	–	–	–	–	–	1	–	3	–	6	5	–	–	–	–	9	–	1	–	8	1	23
1	–	3	–	–	–	–	–	19	–	2	4	3	1	7	1	1	–	–	–	6	–	24
1	–	–	–	2	–	–	–	31	1	7	3	–	–	–	–	9	–	2	–	16	–	25
–	–	13	–	–	–	–	–	10	–	5	3	–	–	4	–	2	–	3	–	4	1	26
1	–	–	–	–	–	–	–	1	–	6	2	2	1	4	–	6	–	4	–	–	–	27
3	–	7	–	–	–	–	–	6	–	6	1	–	–	1	–	1	–	1	–	2	–	28
1	–	–	–	–	–	–	–	2	–	8	3	–	2	1	1	14	–	2	3	2	–	29
–	–	2	–	–	–	–	–	3	–	1	2	1	1	–	–	2	–	–	–	–	–	30
–	–	–	–	3	–	–	–	9	2	6	4	–	–	1	–	1	–	–	–	–	–	31
2	–	–	–	–	–	–	–	1	–	1	–	–	–	4	1	8	–	–	–	–	–	32
–	–	–	–	–	–	–	–	10	–	4	–	–	–	1	–	2	–	1	–	–	–	33
1	–	5	–	–	–	–	–	10	–	1	1	–	–	–	–	–	–	2	–	2	–	34
56	*1*	*60*	*1*	*8*	–	*1*	–	*154*	*2*	*63*	*30*	*7*	*4*	*33*	*2*	*56*	–	*22*	*3*	*64*	*2*	35
–	–	–	–	–	–	–	–	37	–	–	1	–	1	–	–	7	–	2	–	1	–	36
1	–	1	–	–	–	–	–	2	–	3	3	–	–	1	–	2	–	–	2	1	–	37
–	–	2	–	1	–	–	–	–	–	1	–	–	–	1	–	4	–	–	–	1	–	38
1	–	–	–	–	–	–	–	3	–	3	1	–	–	2	–	1	–	–	–	2	2	39
–	–	–	–	–	–	–	–	5	–	3	6	–	–	1	–	5	–	–	–	5	–	40
6	–	–	–	–	–	–	–	1	–	1	–	–	–	1	–	4	–	3	–	1	–	41
–	–	14	–	–	–	–	–	1	–	–	–	1	–	1	–	2	–	1	–	3	–	42
–	–	5	–	–	–	–	–	2	–	8	2	1	–	–	–	–	–	–	–	2	–	43
1	–	5	1	–	–	–	–	7	–	2	1	1	1	2	–	1	–	–	–	–	–	44
–	–	–	–	1	–	1	–	3	–	2	3	–	–	1	–	4	–	2	–	10	–	45
–	–	3	–	1	–	–	–	–	–	5	–	–	–	4	–	2	–	–	–	–	–	46
–	–	2	–	–	–	–	–	17	–	3	1	–	–	2	1	2	–	–	–	3	–	47
–	–	10	–	–	–	–	–	–	–	4	1	–	–	1	–	1	–	–	–	1	–	48
–	–	3	–	–	–	–	–	–	–	1	–	–	–	–	–	2	–	1	–	1	–	49
1	–	–	–	–	–	–	–	3	–	2	3	–	–	1	–	1	–	–	–	4	–	50
–	–	–	–	1	–	–	–	1	2	2	1	1	1	1	–	1	–	–	–	2	–	51

---

monwealth. Owing to the delay by physicians in returning death certificates sent them for addition

Cases and Deaths from Diseases Dangerous

Line No.	Cities and Towns grouped in Order of Population.	Population estimated as of July 1, 1919.	19A Chicken Pox.		9 Diphtheria.		61A Ep. Cerebrospinal Meningitis.		19B German Measles.		10 Influenza.		92 Lobar Pneumonia.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
52	Southbridge,	15,580	–	–	–	–	–	–	1	–	–	–	–	–
53	Winthrop,	14,968	15	–	1	–	–	–	–	–	1	–	2	–
54	Weymouth,	14,874	–	–	15	–	–	–	–	–	3	–	3	**1**
55	Greenfield,	14,466	–	–	3	–	–	–	–	–	1	–	2	–
56	Milford,	14,214	–	–	3	–	–	–	–	–	–	–	–	–
57	Wakefield,	13,939	–	–	2	–	–	–	–	–	2	–	1	–
58	Plymouth,	13,587	–	–	3	–	–	–	–	–	1	**1**	–	**1**
59	Norwood,	13,472	–	–	5	–	–	–	1	–	1	–	1	–
60	Webster,	13,453	–	–	2	**1**	–	–	–	–	1	–	–	–
61	Adams,	13,378	–	–	1	–	–	–	–	–	–	–	–	–
62	Clinton,	13,289	–	–	–	–	–	–	–	–	–	–	1	**1**
63	West Springfield,	13,119	3	–	2	–	–	–	–	–	2	–	–	**1**
64	Danvers,	12,663	16	–	–	–	–	–	–	–	–	–	–	–
65	Dedham,	12,524	–	–	3	–	–	–	–	–	–	–	–	–
66	Natick,	12,175	2	–	–	–	–	–	–	–	–	–	1	–
67	Saugus,	12,061	3	–	6	–	–	–	–	–	6	–	1	–
68	Easthampton,	10,956	–	–	2	**1**	–	–	–	–	1	**1**	–	–
69	Athol,	10,831	1	–	5	–	–	–	–	–	–	–	–	–
70	Bridgewater,	10,807	–	–	11	–	–	–	1	–	–	–	–	–
71	Winchester,	10,590	4	–	–	–	–	–	–	–	–	–	–	–
72	Braintree,	10,417	1	–	1	–	–	–	–	–	1	–	1	–
73	Belmont,	10,219	–	–	–	–	–	–	1	–	–	–	–	–
74	Palmer,	10,191	–	–	4	**2**	–	–	–	–	–	**1**	1	–
75	Towns, 5,000-10,000.	*342,000*	*60*	–	*70*	*1*	*1*	*1*	*1*	–	*24*	*3*	*12*	*8*
76	Towns, 2,500-5,000.	*188,565*	*5*	–	*16*	–	–	–	*1*	–	*11*	*2*	*2*	*5*
77	Towns under 2,500.	*211,793*	*5*	–	*14*	*1*	*2*	*2*	*1*	–	*8*	–	*1*	*2*
78	State Infirmary,	–	*16*	–	*2*	–	–	–	–	–	–	–	*1*	–
79	Camp Devens,	–	–	–	–	–	–	–	–	–	–	–	–	–

In addition to the above there occurred 17 cases of anterior poliomyelitis, 4 in Boston, 1 in Brockton,
Worcester, with 2 deaths, 1 in Bridgewater and 1 in Cambridge; 3 cases of anthrax, 1 in Peabody, 1 in Salem
2 in Boston, and 1 in Scituate; 5 cases of malaria, 3 in Boston, 1 in Camp Devens, and 1 in Springfield;
ton, 1 in Cambridge, 1 in Haverhill, 2 in Lowell, 1 in Medford, 6 in Newbury, 4 in Newburyport and 1 in
tetanus in Boston, with 3 deaths, 1 in Boston, 1 in Brookline and 1 in Pittsfield; 7 cases of trachoma, 3 in

TO THE PUBLIC HEALTH — Concluded.

6 Measles.		19C Mumps.		38A Ophthalmia Neonatorum.		38B Suppurative Conjunctivitis.		7 Scarlet Fever.		28-29 Tuberculosis, Pulmonary.		30-35 Tuberculosis, Other Forms.		1 Typhoid Fever.		38C Gonorrhœa.		37 Syphilis.		8 Whooping Cough.		
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Line No.
–	–	–	–	–	–	–	–	2	–	1	–	1	1	7	–	3	–	1	–	3	–	52
1	–	1	–	–	–	–	–	1	–	1	–	–	–	1	–	2	–	–	–	2	–	53
–	–	–	–	–	–	–	–	3	–	1	–	–	–	–	–	–	–	–	–	–	–	54
–	–	1	–	1	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	8	–	55
–	–	–	–	–	–	–	–	5	–	1	–	–	–	–	–	–	–	2	–	–	–	56
–	–	–	–	–	–	–	–	9	–	1	1	–	–	–	–	–	–	–	–	4	–	57
8	–	–	–	1	–	–	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	58
–	1	–	–	–	–	–	–	2	–	1	–	–	–	–	–	1	–	–	–	–	–	59
1	–	–	–	1	–	–	–	–	–	–	–	1	–	1	–	2	–	–	–	–	–	60
–	–	–	–	–	–	–	–	–	–	2	–	–	–	1	1	–	–	1	1	3	–	61
–	–	–	–	–	–	–	–	1	–	2	–	–	–	1	–	1	–	1	–	4	–	62
–	–	–	–	–	–	–	–	2	–	1	–	–	–	–	–	1	–	1	–	–	–	63
34	–	–	–	–	–	–	–	1	–	–	1	1	–	–	–	–	–	4	–	–	–	64
–	–	–	–	1	–	–	–	1	–	1	1	–	–	1	–	–	–	2	–	–	–	65
–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	3	–	1	–	–	–	66
–	–	2	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	67
–	–	–	–	–	–	–	–	17	–	2	1	–	–	–	–	–	–	–	–	–	–	68
1	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	1	–	–	–	–	–	69
–	–	–	–	–	–	–	–	14	–	2	1	–	–	–	–	1	–	–	–	3	–	70
–	–	1	–	–	–	–	–	2	–	1	–	–	–	–	–	1	–	–	–	–	–	71
1	–	–	–	–	–	–	–	3	–	3	1	–	–	–	–	–	–	–	–	–	–	72
–	–	10	–	–	–	–	–	–	–	2	1	–	–	1	–	1	–	–	–	–	–	73
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	74
10	–	*45*	–	*5*	–	*1*	–	*53*	–	*18*	*9*	*2*	*4*	*18*	*2*	*34*	–	*15*	*3*	*19*	–	75
6	1	*3*	–	–	–	–	–	*31*	–	*12*	*4*	*1*	–	*5*	*1*	*8*	–	*3*	–	*10*	–	76
29	–	–	–	–	–	–	–	*30*	–	*6*	*23*	–	*2*	*15*	*1*	*8*	–	–	–	*44*	–	77
–	–	–	–	*1*	–	–	–	–	–	*7*	*9*	*1*	–	*1*	–	*14*	–	–	–	*1*	–	78
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	*9*	–	*3*	–	–	–	79

1 in Clinton, 1 in Everett, 4 in Lowell, 2 in Lynn, 1 in Methuen, 1 in Springfield, 1 in Warwick, and 1 in and 1 in Weymouth; 12 cases of dog bite, 1 in Fall River, 3 in Lowell and 8 in Swansea; 3 cases of dysentery, 1 case of pellagra in Boston, with 1 death in Danvers; 22 cases of septic sore throat, 5 in Boston, 1 in Brock- Provincetown, with 1 death in Newbury; 2 cases of smallpox, 1 in Boston and 1 in Lawrence; 1 case of Boston, 1 in Chicopee, 1 in Fitchburg, 1 in Watertown and 1 in Williamsburg.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

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[1] Acting.

THE COMMONHEALTH

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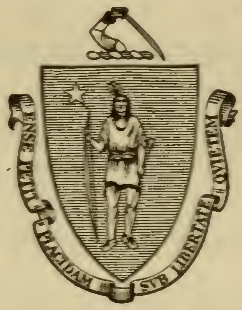

BI-MONTHLY BULLETIN

MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

EUGENE R. KELLEY, M.D., COMMISSIONER

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THE CARRIER IN AN OUTBREAK OF DIPHTHERIA.[1]

Massachusetts Department of Public Health.
Passed Assistant Surgeon, L. L. Williams, Jr., U. S. P. H. S. Epidemiological Aide.

In this age of activity, in the confusion and hurry of modern life, many procedures of proven value are overlooked. It is not my purpose to-day to divulge the conclusion of an original research, but to make a brief stay of the current, and recapitulate some well-known and abundantly proven facts and procedures in a well-known disease, — diphtheria.

Diphtheria is one of the best known of the infectious diseases, and one which has partially come under control through the application of the ready means the research workers have placed in the hands of the sanitarian. The fatality of the disease has been enormously reduced in the past twenty years through the use of antitoxin, but the incidence only moderately through isolation of the sick. Yet diphtheria still looms a menacing disease. This State for the past seven years has averaged about 8,000 cases a year, with 600 deaths.

Consider these figures a moment. We are so used to computing sickness and death in the hundred thousand and over that mere figures no longer seem appalling unless they run almost to the millions. Aside from the sacrificing of 600 lives and the illness of 8,000 people, what other losses are there to the community? Assuming the average period of quarantine in diphtheria as fifteen days; realizing that the vast majority of cases occur among children of school age during the school season; then the average loss to the school child of Massachusetts yearly is 160,000 school days, or, to put it differently, a year's schooling to 800 children, which number would represent a town of about 5,000 inhabitants. Imagine a town of 5,000 in which the children receive absolutely no schooling, and one sees more clearly the loss to the State in education.

The cost of treatment of an average case of diphtheria is about $30; the cost of a funeral about $200; then the annual cost of diphtheria in a cash outlay is over $250,000. The economic loss is probably much higher.

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[1] Read before the meeting of the Massachusetts Association of Boards of Health, Springfield, Mass., April, 1920.

Here is a disease which, well known as it is, is costing this State the education of a town full of children and an outlay of a quarter of a million dollars; 8,000 cases of sickness and 600 lives annually! It is too much.

What do we know of the means of spread of this disease? The old belief that it is air-borne has been overthrown. That it has occasionally been borne by milk (less frequently by water) has been shown a number of times. But it has also been indicated that such sources are seldom a means of spread, and not in any wise a natural one. Then there is contact, — contact of the well with those who harbor the diphtheria bacillus. This contact is both direct and indirect; direct (or nearly direct) contact is perhaps responsible for the vast majority of cases.

At first the great cry was against both direct and indirect contact; that the great danger was not only from the sick person, but from everything he touched, his room and his entire house. This is true for those things he has recently touched while the disease is active. But what are the chances of the bacilli remaining alive on inanimate objects and in dust long after they have ceased to grow in the fertile field of the throat and nose? The bacillus soon dies when exposed to sunlight. Those workers who have recovered the organism long after the patient was well only did so on infrequent occasions, and then almost exclusively when the material was kept damp and dark. It is of interest to note that most of the early workers looked for the bacillus on the floor of the sick room, on the walls, in the dust, and on the sheets; never looking in the throats or noses of members of the household who came in contact with the sick one.

It is fair to say that the majority of health departments spend more time, money, thought and energy on the cleaning up of residual infection in a home that has been occupied by a diphtheritic patient than in searching for the bacilli in their more normal habitat, — the mucous membranes of those who have been in direct contact. It is granted that during the period of active sickness great care is taken to minimize direct contact with the sick by isolation within the house, placarding, and some attempt to isolate the sick from the rest of the family. That is applying our greatest measure of control — minimizing direct contact — to the known sick. Why do we stop there? The next greatest effort is to clean up after a case — to fumigate. No further attempt here to minimize direct contact, but to prevent indirect contact. Does this last measure pay? Would there be many more recurrent house cases after an active case if fumigation were discontinued?

In Providence from 1902 to 1905, during the period of house fumigation, the ratio between infected houses and recurrences was 1:7. From 1905 to 1911, when no fumigation was done after diphtheria, the ratio was only 1:8. In Baltimore, where terminal fumigation is most thorough, the ratio between recurrences and cases from 1903 to 1909 was 1:76. In Providence, where no such fumigation was done, the ratio from 1905 to 1911 was less, being 1:64.

From this we can see that the danger from fomites and house infection is small. What, then, continues the infection? Some have argued the missed cases, — those mild cases not seen by a physician. These being unknown to the health officer are not isolated. They are undoubtedly a large factor. But can such cases explain the continuance of institutional outbreaks where the best of medical care is given and where daily search is made for cases, where missed cases must be a very small proportion? Such outbreaks have happened repeatedly and have continued for long periods. I will not instance any here; the literature is full of them. Why should this be? Why should the reduction of cases of diphtheria have been only moderate following the introduction of isolation measures as applied to the sick? The answer is to be found in the carriers, — carriers both healthy and unhealthy. As Chapin so aptly expresses it, "Why keep the patient indoors for six weeks when other members of the family with infected throats are going about?"

The importance of the carriers cannot be too strongly emphasized. The danger from these is most clearly summarized by Chapin when he says, "there can be no doubt, then, that mild and unrecognized cases of diphtheria are very common, that convalescents long harbor the bacilli, and that contacts and other carriers are very numerous; in fine, that these sources of infection far outnumber the cases of recognized sickness. But are these really sources of infection, or are they, as so many believe, an imaginary danger evolved in the brain of the laboratory worker? It is well, again, to emphasize the fact that long before Klebs and Loeffler identified the bacillus of this disease a few clinical observers like Jacobi believed that evidence pointed clearly to the great danger of these unrecognized sources of infection. The bacteriologists have not raised the bugaboo of carrier infection; they have simply explained the facts which observing men have long recognized." In his most conservative argument he concludes that there will be in a city of 100,000 people at least 150 well persons carrying virulent diphtheria bacilli. "Why should the bacteriologist ignore these 150 sources of infection and insist on two throat and nose negative cultures from every reported patient? Or why should he, as he occasionally does, recommend isolating the carriers in the family, but ignore all other carriers? Why neglect this whole question of carriers, and spend endless time in devising methods of liberating formaldehyde to kill the few bacilli that may remain about the house? Why worry about the saliva that may have gotten on the book, a coat, or the wall of a room, and neglect the reader of the book, the wearer of the coat and the dweller in the room, who is probably growing the germs in his throat and nose? It is not easy to answer these questions, and so the bacteriologist withdraws to his laboratory and ignores them, but the health officer must answer them in one way or another." He continues, "I think I am well within bounds when I assume that for every recognized case of diphtheria there is at least one sore throat which is also diphtheria though unrecognized." "Careful medical inspection often discovers that the missed cases have been the source of reported cases."

Of course one actually sick with this disease produces an enormously greater amount of infection per person than do the carriers, but for every case actually sick there are probably two carriers. Quarantine of the reported cases cannot, therefore, conceivably give over one-half protection.

During the average diphtheria outbreak, quarantine of the reported sick constitutes about 99 per cent of the control measures now in common use, and is perhaps about 40 per cent effective. Wherein does the average community fall down? In not attempting to find and properly care for the carriers. We quarantine the sick, placard the house, practice terminal fumigation and leave the care of the carriers to a kindly but overburdened Providence.

It should be the routine business of all departments of health to see that the carriers in the homes of those sick should be found. Following every reported case of diphtheria, cultures from all members of the household should be secured through the physician, inspector or nurse. According to the exhaustive work of Graham-Smith, here is where the greatest number of carriers is to be expected. He showed that 66 per cent of the members of the family to which the diseased person belonged were infected. He also showed that where great precautions were taken to isolate the sick within the home, this percentage fell markedly; and that where the sick were not isolated within the family at all, this percentage rose in some cases to 100 per cent.

Of even greater importance than the search for family carriers during the sickness of a member of the household is the taking of release cultures from all when such cultures are taken from the one who has been actually sick. For if the sick one should prove to be negative twice in succession, then all quarantine measures as a rule stop. Other children in the family may be carriers. In returning to school they may cause a wide dissemination of the disease. Why should we carefully release the fumes of formaldehyde in an infected house while allowing the living carriers with virulent organisms to commingle with society and constantly spread a fresh supply of infection?

As a rule, a careful study of an outbreak will reveal some one or more common points of general dissemination. Such points of dissemination should be found as early as possible and corrective measures there applied. This consists mainly in the discovery of the carriers present. These points of dissemination should be looked for among the milk or food handlers, in camps, institutions, schools, industries that require crowding, etc. Of these, by far the greatest source is the school. In Massachusetts in 1917 there were 78 outbreaks of diphtheria, of which 39 were investigated. Thirty-seven were designated as contact outbreaks, and it is highly probable that carriers played a large role in this "contact." These 37 contact outbreaks are divided into two classes, — 17 designated simply "contact," and 20 designated "school contact." This illustrates the importance of the schools.

When the source of dissemination of infection is found there are three courses open to the health officer. First, is the old method of closing the source, such as closing infected schools or institutions. This serves to scatter the infection, thus changing the outbreak to one of neighborhood contacts. The second is to follow the time-honored custom of isolating the sick and trusting to Providence to do the rest. The third and best is to follow the old practice of isolating the sick and then make a concerted effort to find and isolate the carriers.

The procedure is simple. Having determined the source, whether home or neighborhood contacts, or in industry, institution or school, take cultures from all in the suspected focus or foci. It may perhaps best illustrate this procedure, and the results that may be obtained, by taking one characteristic case and following it in brief detail. Such an outbreak occurred in this locality in Westfield last fall and winter, amounting to about 75 cases. A study of those reported did not indicate milk or other food as a possible source. The homes were too scattered to suggest home or neighborhood contacts as the main means of spread. However, it was seen that the majority of cases were among school children of five different schools.

Having determined that these schools were the foci of dissemination, the next step was to discover the carriers. The health agent secured from the Department of Public Health the requisite tubes and swabs. Five hundred were sent him each week, enough to culture one school at a time. With two nurses we had no trouble in securing cultures from 300 to 500 pupils and teachers in a single day. Both throat and nose cultures were taken, for about 20 per cent of the carriers in some outbreaks have been found to harbor the bacillus in the nasopharynx only. These cultures were mailed to the State laboratory for diagnosis.

Virulent carriers only were reported as positive. We took almost 2,000 cultures, among which were detected 11 virulent carriers. These were removed from the schools and isolated until negative releases were secured. This single measure only was added to that of isolating the sick. The outbreak promptly subsided.

During the active period of this outbreak, when isolation of the sick was the only control measure, there was an average monthly incidence of about 20 cases. Soon after the commencement of our additional control measures the monthly rate fell. The last carrier was found and isolated in January, 1920. Since then there have been but five new cases, this in a period of three months. The usual number for this period has in past years been about 15.

It is easily possible that there would have been no outbreak at all if, in the early cases, two negative release cultures had not only been required from those sick, but also at least from the younger members of the family. The most important measure that yet remains to be introduced as a routine in the control of diphtheria is the regular search for carriers. As Rosenau has concluded, "It is plain that the control of diphtheria outbreaks in institutions, camps, on shipboard, in schools and in similar places where a number of people are crowded together, as well as the final control of epidemic outbreaks in cities and towns, depends eventually upon the recognition of carriers and their isolation."

You, the health agents of Massachusetts, are applying the first measure of control, — isolation of those sick. You hold in your hand the key to the eventual reduction in cases and outbreaks by isolation of home contact carriers; and especially by searching out and isolating those other culpable carriers that are often at the root of an outbreak.

POSTURE CLINICS ESTABLISHED BY A SCHOOL NURSE.

IDABEL DURGAN, R.N., PUBLIC HEALTH NURSE, WINTHROP, MASS.

THE town of Winthrop, Mass., has proved that postural corrective work can be successfully carried out in the public schools without elaborate apparatus.

Winthrop is a town of 15,000 population, near Boston, with a school population of 2,600, including the high school.

In October, 1919, the Winthrop branch of the Red Cross presented to the town a school nurse, the town not yet having realized the value of a nurse in the schools.

The school nurse, after getting the routine of daily inspection and "follow up" work systemized, began to plan for special work. The nutrition clinics had to wait for scales to weigh the children; the dental clinic was not yet provided for; so the remaining member of the important trio of fundamentals of child health — posture — took precedence in the nurse's program.

While in the West End of Boston, the writer became greatly interested in posture through the work of her school physician, Dr. Mary Moore-Beaty. Dr. Beaty, in a careful examination of 1,800 children, stripped to the waist, found 426 children with more or less marked degrees of postural defect. In a period of five years in the same district Dr. Beaty found an average of more than 1 to 5 with these defects, and also found that the cases marked postural for several years developed into structural defects, and the majority of pretubercular children were found in this group. A very small proportion of these cases could be treated at the Massachusetts General Hospital posture clinic, and a few more were sent to the Normal School of Gymnastics, through the Boston Tuberculosis Dispensary. These children were taken to the school by the Red Cross Motor Service once a week.

In Winthrop the car fares and distance made it a difficult problem to take the children to the Boston hospitals, and even at best, but very few could be treated.

It was believed that the work could be done in the schools Miss Theresa Key, the physical director of the Winthrop schools, was consulted, and responded enthusiastically. Miss Key is a graduate of the old Boston Normal School of Gymnastics, now a part of Wellesley College, and had her posture corrective training in the clinics of the Children's Hospital.

Together the nurse and the physical instructor visited the clinics at the Massachusetts General Hospital, and watched the work there which was conducted by a graduate of a school of gymnastics, assisted by students, under the direction of Dr. Lloyd Brown, who is an enthusiast on postural corrective work. Very little apparatus was used in the hospital clinic.

Mr. Frank A. Douglas, the progressive superintendent of schools of Winthrop, gave his hearty co-operation, and the work was launched.

Of course, what has been done this year has been just a crude beginning, but has shown the need and the practicability of the remedy.

As to the need, all physicians of standing to-day agree as to the harmful affects of continued bad posture on the lungs and abdominal organs, as well as the more serious spinal curvatures resulting with their attendant ill effects on the health.

Parents labor with the children till both are weary of the constant reiteration of, "Johnny, do sit up straight, you will grow that way." In many cases neither Johnny nor his parents realize that he has already "grown that way," so that it is a physical impossibility to hold himself erect, and in many cases even to get his shoulders back into a normal alignment.

The little muscles have become contracted and rigid, drawing the weak little shoulders forward so that the shoulder blades project in the so-called wings in the back; to balance this malposition the little abdomen protrudes, the ribs crowd the stomach, and the back sways into a bow, and there you have the typical picture so common in all the schools of our land to those who have eyes to see. With this malposition the child becomes easily tired.

As the physical examinations had been made with no attention to postural defects, the teachers were first approached, and were most enthusiastic to find a solution of their problem of making Johnny sit and stand correctly. Most teachers confessed to being weary of the constant commands, "Sit up straight in your seat. Do stand erect."

The children most noticed by the teachers were sent to the nurse and the physical instructor who examined them stripped to the waist. With very few exceptions these children needed corrective work.

Diagnosis cards were printed by the school press, and each child's record filed for reference to his individual needs. A typical diagnosis card reads as follows: —

POSTURAL CORRECTIVE EXERCISES, WINTHROP PUBLIC SCHOOLS.

NAME: MABEL JONES. AGE: 12.

Shoulders forward.
Scapulæ prominent (wings).
Right shoulder high.
Lateral left dorsal curve.
Pectoral muscles rigid.
Abdomen prominent.

The examination of children without the clothes was done very carefully so as not to expose them to cold or draught, only three or four children being ready at one time, and the undershirt dropped at the last minute to the waist line. This seeing the backs of the others was the greatest object lesson possible. One boy would say, "Aw, look at his wings, mine are not like that," and a chorus from the others, "Yours are worse than his," made the youngsters eager for a remedy as no amount of talking could make them.

The school halls were used for the exercises. The apparatus consisted of: —

A solid table for the child to lie on.
A small firm pillow to place under the shoulder blades (a folded sheet will do).
Two small stools (made for us by the manual training class).
A horizontal bar.
Dumb-bells.
A doorway is used for some of the exercises.

The children were taken in small groups, called from the classrooms for about a half hour each week. Some of the exercises were given in a group, then each child was taken for individual work, to meet his special needs.

Daily exercises were prescribed, to be done at home under parental supervision.

In cases where marked spinal curvature was noted, the nurse visited the home, and a visit to a physician was advised.

About 100 children were in the classes this year, — all that could be cared for in the time which could be spared by the nurse and the physical instructor from their other duties.

Next year it is hoped to have the postural defects noted by the school physician, and more children treated.

It is aimed to impress the children with an ideal of what a correct posture means to their future health and usefulness, besides the value of a good appearance.

The children have responded with interest and enthusiasm. An ideal formed early is very essential. This fact is shown by the answer of young high school girls: "Oh, it is fashionable to walk and stand this way," and "It is too much bother to stand straight," and they will follow the fashion or die in the attempt.

Correct breathing forms a fundamental part of the corrective work, as few children breathe correctly or sufficiently for health.

The teachers report a decided improvement in the children of our classes. One mother telephoned the principal of one of our schools, "I do hope they will keep up the posture classes. I would gladly pay to have my daughter continue."

The results have been very gratifying in so short a time, but only a very few cases, the most needy, have been reached.

Summary.

1. An examination of children, stripped to the waist, reveals unsuspected postural defects.
2. Correction of postural defects prevents structural curves, and prevents a tendency to tuberculosis from lung crowding, especially at the apices.

The corrective work can be done easily in the schools by nurses and physical training teachers, with little apparatus.

A REPORT ON THE NATIONAL CONFERENCE OF NURSES IN ATLANTA, GA., 1920.

Hazel Wedgwood, R.N., Health Instructor, Massachusetts Department of Public Health.

The joint biennial convention of the three national nursing organizations, *i.e.*, the American Nurses Association, the National League for Nursing Education, and the National Organization for Public Health Nursing, was held in Atlanta, Ga., April 12 to 17, 1920, and delegates were present from all sections of the United States. The international council was represented at the conference by delegates from Canada, Holland, Denmark and Finland, and among the three or four thousand nurses present were two nurses from Belgium, a nurse from France and a Japanese nurse. The Japanese nurse, in her beautiful native costume, added color to the occasion, and the charming and dainty Belgian nurses, in their attractive uniforms, invited much attention.

The conference program covered the work of the three nursing associations, and the meetings at which the different phases of the work were discussed were often held simultaneously. Attendance, therefore, at all the meetings was impossible, and it was necessary to study the program closely and decide on the meetings covering the topics in which one was most interested.

Prior to the official opening of the conference informal meetings were held by the National Organization for Public Health Nursing, for the purpose of organizing new sections and providing more opportunities for the discussion of public health work than is possible during the regular sessions of the conference.

The regular meetings of the conference will be reported in the various nursing journals, but the earlier meetings were entirely informal and were not officially reported. At these early meetings there was a general session each day on "general community nursing," with particular reference to the small town and country needs. There were also section meetings on industrial, tuberculosis, school and infant welfare nursing. Among the important matters discussed at these meetings were —

The value of records, and the proper way to plan and develop a record.
The organization of nutrition clinics in small towns, and procedure in teaching nutrition.
Methods of teaching health habits to children.
Making good in industry.

The importance of keeping records and the necessity for complete and uniform records were emphasized in a paper given by Miss Hunter of the Federal Children's Bureau, and the discussion which followed was most interesting and helpful.

Miss Hunter stated that thought and consideration should precede the adoption of any record system, as poor records are expensive as well as useless. Such records are seldom properly kept, and cannot be used in comparative studies, and sooner or later they are discarded. Miss Hunter suggested that in planning a record, the following rules be observed: —

1. A decision as to the definite work to be covered is essential, *i.e.*, whether the work is to be generalized or specialized service, such as general community work or tuberculosis work, etc.

2. Before deciding on a record a study should be made of all available records used by similar organizations, that one may profit by their experience and work out a uniform record.

3. All items to appear on the record should be listed under the following headings: identification, social history, physical history, record of performance.

4. Eliminate all items which are not necessary. Many times items are entered on a record, not because they have any use or value, but because they appear on other records.

5. In the planning of records the decision on the physical form of the record is often made before the other essentials are considered, and the result is a poorly arranged record. To insure proper spacing for the items listed, decision as to form should be postponed until all items are listed.

6. Written instructions on the keeping of records should be the basis of the "office manual." Every item on the record should be explained in these instructions, with interpretations of the terms used. Very definite interpretations are necessary regarding standardized terms, such as "general care" or "instructive care."

Miss Hunter further recommended that all active case records be kept at the nurses' station, and that when a patient is discharged the record be filed with the other closed records, but an out-sheet containing certain identifying information regarding the patient be kept in the nurse's file; also, time is well expended and greater efficiency is assured when every part of the work is studied to determine the very best way of performing it. The decisions reached through such studies should be included in the office manual.

There was considerable discussion following Miss Hunter's paper as to the meaning of such terms as "sanitary condition," "milk supply," "housing and sanitation," which are often found on records, and the consensus of opinion was that such terms were ambiguous, and clearer terms should be used. The term "record of performance," which means actual service rendered to patients, including home visits, seemed to meet with general approval.

Malnutrition and nutrition clinics were discussed at several sessions, and Mrs. Ira Couch Wood of the Elizabeth McCormick Fund of Chicago outlined the work which had been carried on by the managers of the fund to secure better health for the children of Chicago. This fund was left by Mr. and Mrs. Cyrus Hall McCormick in memory of their daughter Elizabeth, to be used for the welfare and betterment of children.

The first work undertaken by the fund was the establishment of an open-air school on the roof of Hull House in 1908. The results obtained in this experiment led to the establishment of open-air schools throughout the city. At the present time there are 23 such schools caring for about 750 children in Chicago, and these schools are now managed by the school authorities.

Mrs. Wood stated that in their work with the children of the open-air schools there were always a few who did not improve, and it was not until the nutrition classes were established that they were able to secure 100 per cent return from their work. The fund has now established several nutrition classes in various parts of Chicago.

The reasons for malnutrition are used as the basis for nutritional work, and are here listed in order of their importance.

1. Physical defects (principally of the breathing passages).
2. Lack of home control.
3. Overfatigue (too much excitement and not enough sleep).
4. Insufficient food and faulty food habits.
5. Faulty health habits.

The first essential in nutritional work is a thorough physical examination of every child admitted to the class. The typical appearance of the malnourished child is hollow chest, prominent shoulder blades, dark circles under the eyes, protruding abdomen. The arms hang limply and the knees are slightly bent, giving a disconsolate "stringy" appearance, and many of these defects go unnoticed unless the child is stripped; therefore a physical examination for every child is necessary.

The next essential is adequate follow-up work to improve or correct home conditions.

The nutritional classes are limited to 15 or 20 pupils, and each pupil is weighed and measured weekly and the results noted on individual charts. A conference is held weekly with pupils and their parents, generally the mother, and the causes of the gain or loss in weight are discussed in class, and advice given to both parents and children regarding conduct for the coming week. The pupils are rated according to the increase in weight, and the child who does not gain in weight is placed with his mother, at the foot of the class. When the child has reached his normal weight and height, weekly attendance at the classes is not required.

Mrs. Wood emphasized the fact that the class method of work will save much home visiting, but will never eliminate it.

The second cause of malnutrition, the lack of home control, which means that the child is allowed to do as he pleases, is corrected by showing the results of such conduct, and by securing the active co-operation of both the child and its parents in correcting this condition. The class method, through the introduction of competition, stimulates this co-operation.

The correction of the other causes of malnutrition is worked out along the same lines, that is, through teaching both parent and child the value of health, and how to secure and maintain it.

One criticism of the methods of the nutrition classes as outlined above is the psychological effect on a child through keeping him at the foot of the class when he did not gain in weight, although he may have faithfully followed all instructions. It would seem that some recognition should be given a child for faithful work, and there is danger of discouragement to the child if this recognition is withheld.

Miss Rose of the Child Health Organization spoke on the subject of the health education of children. She stated that the results of the physical examinations of the draft had led to the formation of a committee of the New York Academy of Medicine in 1917, whose purpose was to plan an effective health program for children. This committee was later augmented by lay members and became the Child Health Organization. The present program of the organization is: (1) a pair of scales in every school for systematic weighing and measuring of children; (2) time allowed in every school for the teaching of health habits; (3) a hot lunch available for every child; (4) teachers trained in normal schools to teach health habits; and (5) every child's weight record sent home on the monthly report cards.

Miss Rose told of the very successful work of the two health clowns and the health fairy who are employed by the organization to teach health habits to children. The work of the clown, Cho-Cho, is already well known, and his success is unquestioned. The work of the health fairy is a later activity of the organization, and is an entirely different method of teaching health habits. The health fairy has also demonstrated her ability to charm, interest and teach children.

A very inspiring talk was given by Miss Nesta Edwards, consultant in industrial service (Chicago), on "Making Good in Industry." She stated at the beginning of her talk that she was not a nurse, and for that reason was privileged to say certain things which nurses could not say. She felt that the first requirement for any one going into industrial work was a sense of humor, and that training "was only an added tool in the kit for the day's labor." She felt very strongly that the industrial nurse should be responsible only to the chief executive of the firm, and not to the physician. "Of course," she said, "the shysters will object," but the well-trained industrial physician realizes that this is a good arrangement, as it allows the nurse to report certain things which otherwise would never reach the executive offices, and in the long run makes for better feeling on the part of every one concerned. She also said that a nurse should be responsible only to the firm for whom she is working, and that she should not be supervised by outside agencies.

Miss Edwards' business is to introduce the nurse to the business ends of the work, as the average nurse seldom has had a business training.

I wish I could bring to every one who was not able to attend the conference the feeling which Miss Edwards, with her unlimited amount of energy and optimism, left with us, — the feeling that no other service was greater than that of public health work, and also the feeling of joy in work well done.

Miss Edwards gave, as the secret of success, the ability to say "Come on, let's" instead of "You go."

HEALTH DIVIDENDS YOU HAVE DRAWN.

By Stanley H. Osborn, M.D., C.P.H., Epidemiologist, Massachusetts Department of Public Health.

THE residents of Massachusetts have not realized the decrease in deaths from communicable diseases in the State during the past few years, because of the gradual manner in which they have diminished. In order that they may realize a few of the results attained, in part at least, by the expenditure of funds by their local boards of health and the State Department of Public Health, this article has been written.

To show the results of the progress of preventive medicine in the Commonwealth there are given below the median and average number of deaths and death rates for the more prominent communicable diseases for the three ten-year periods 1890–99, 1900–09 and 1910–19. The statistics for the single year 1919 are given also to show that the deaths and death rates are still on the downward trend, despite the increase in population. The factors common in the reduction of all diseases have been isolation of cases and quarantine of contacts.

Population. — The population of the State has increased greatly since 1890, and is given, the better to appreciate the decrease in deaths with an increasing population.

Population of Massachusetts.

YEAR.	Population.	YEAR.	Population.
1890,	2,238,943	1910,	3,380,151
1900,	2,805,346	1919,[1]	4,033,826

[1] Estimated from 1915 State and 1910 Federal censuses.

Typhoid Fever.

PERIOD.	DEATHS.		DEATH RATE (PER 100,000).	
	Median.	Average.	Median.	Average.
1890–99,	737	727	29.4	29.5
1900–09,	518	501	16.6	16.7
1910–19,	258	239	7.0	6.6
1919,[1]	–	–	–	–

[1] Deaths, 102; death rate, 2.6.

Briefly stated, the factors in reducing typhoid fever have been the improvement in water and milk supplies, sewage disposal, general sanitation and the typhoid vaccine. In 1917 routine work was begun on the investigation of cases, particularly to locate typhoid bacilli carriers. Persistent and increasing efforts by the local boards of health and State District Health Officers brought to light 10 carriers in 1917, 7 in 1918 and 13 in 1919. Periodically each carrier is looked up to make sure that he is not engaged in an occupation where food is handled, and that he is not a danger to others.

Diphtheria.

PERIOD.	DEATHS.		DEATH RATE (PER 100,000).	
	Median.	Average.	Median.	Average.
1890–99,	1,440	1,413	60.3	57.6
1900–09,	749	867	23.9	29.0
1910–19,	627	638	17.1	17.3
1919,[1]	–	–	–	–

[1] Deaths, 591; death rate, 14.8.

The special factor in diphtheria which assisted in the lowering of the death rate is diphtheria antitoxin, introduced in 1894 and within a few years universally used. Prior to 1894 from 20 to 30 died out of every 100 ill with diphtheria, but in 1919 only 7 children died out of each 100 cases of diphtheria.

A remarkable fact in diphtheria fatality has been demonstrated in Paris and reported by Roux in the Office International d'Hygiene Publique, 1919, XI, No. 11. In the Children's Hospital in Paris there were 15,271 cases of diphtheria for the five years 1914–19. Of this number only 378 died, giving a fatality rate of 2.64 per cent. This indicates that the fatality rate of 7.2 per cent for Massachusetts is still capable of being reduced.

SMALLPOX.

PERIOD.	DEATHS.		DEATH RATE (PER 100,000).	
	Median.	Average.	Median.	Average.
1890–99,	3	7	0.10	0.30
1900–09,	5	42	0.15	1.50
1910–19,	–	2	0.01	0.07
1919,[1]	–	–	–	–

[1] Deaths, 2; death rate, .95.

The particular factor in the prevention of smallpox is vaccination. By vaccination this disease has been controlled; but even in modern times smallpox prevails in the communities where groups of anti-vaccinationists are actively opposing vaccination.

The last great epidemic in Massachusetts was in 1901–03, when 403 persons died of the disease. This gave the 1900–09 period the high death rate shown above in the average, the median not being affected.

During the last decade the deaths have been from a smallpox strain from foreign lands gaining a foothold in the unvaccinated. Thus in 1915 there were 9 deaths in 24 cases.

Pulmonary Tuberculosis.

PERIOD.	DEATHS.		DEATH RATE (PER 100,000).	
	Median.	Average.	Median.	Average.
1890–99,	5,505	5,506	223.2	224.0
1900–09,	4,693	4,724	156.6	157.9
1910–19,	4,315	4,421	119.0	119.7
1919,[1]	–	–	–	–

Deaths, 4,155; death rate, 104.5.

The death rate for pulmonary tuberculosis declined steadily until 1916, when it increased to 118.2 as compared with 113.2 in 1915. The rate increased to 120.5 in 1917 and 127.8 in 1918, but promptly fell at the ending of the war, the rate for 1919 being 104.8. Influenza played a part in the huge rate for 1918, but all of the factors responsible for this fluctuation are not as yet known.

Scarlet Fever.

PERIOD.	DEATHS.		DEATH RATE (PER 100,000).	
	Median.	Average.	Median.	Average.
1890-99,	338	412	11.5	15.8
1900-09,	299	284	10.0	9.9
1910-19,	156	173	4.1	4.8
1919, [1]	–	–	–	–

[1] Deaths, 130; death rate, 3.3.

Measles.

PERIOD.	DEATHS.		DEATH RATE (PER 100,000).	
	Median.	Average.	Median.	Average.
1890-99,	127	155	5.2	6.3
1900-09,	192	228	6.4	7.6
1910-19,	263	278	7.6	7.4
1919, [1]	–	–	–	–

[1] Deaths ,183; death rate, 4.6.

Whooping Cough.

PERIOD.	DEATHS.		DEATH RATE (PER 100,000).	
	Median.	Average.	Median.	Average.
1890-99,	278	294	11.2	11.9
1900-09,	269	303	8.3	10.1
1910-19,	263	307	7.2	8.2
1919, [1]	–	–	–	–

[1] Deaths, 319; death rate, 7.6

Of these three diseases, only one, scarlet fever, is controlled to any great extent. Deaths from measles and whooping cough instead of decreasing have increased to a certain degree as the population in the State has increased, as is clearly indicated in the foregoing table. Whooping cough was greatly affected by influenza, there being 240 deaths in 1917, 699 deaths in 1918, the epidemic year, and 319 deaths in 1919. Thus the average deaths and rate for the 1910–19 period is higher than would have been the case if the influenza epidemic had not occurred.

It is hard for people to realize that there are more deaths from measles and whooping cough than from scarlet fever. Greater efforts in school hygiene would seem to be the only way in which this problem can successfully be coped with, combined with the education of parents in the necessity for the observation of quarantine and isolation procedures.

In other diseases the work goes on to reduce the deaths and to treat disease to a successful outcome, particularly with biological products.

In anthrax, prior to 1916, the fatality rate ranged from 12.5 per cent in 1914 to 40 per cent in 1908. In 1919 the fatality rate was 5.5 per cent. This remarkable reduction in the fatality of this disease has been brought about by treating the case with corrosive poultices, rest in bed, liquid diet, the use of anthrax serum, and, above all, by not operating on the case.

The use of the serum in the treatment of epidemic cerebrospinal meningitis has decreased the fatality rate of this disease from 95.4 per cent in 1911 to 69.9 per cent in 1919.

By checking up all dogs suspected of being rabid, and by urging the use of the anti-rabic treatment on all persons bitten by a dog whose head showed the presence of Negri bodies on laboratory examination, human rabies has practically been eliminated from the State. Prior to the free distribution of anti-rabic treatment by the Department through the courtesy of the United States Public Health Service, who make the product, there were from 2 to 8 deaths from human rabies each year. From 1916 to 1919 there was only 1 death from human rabies.

HOW COOKING AFFECTS THE DIGESTIBILITY OF FOODS.

By Alzira Wentworth Sandwall, S.B., Health Instructor in Foods, Massachusetts Department of Public Health.

OF all the necessities of life proper food is without doubt the greatest, for unless the body is well nourished it is impossible for man to be of good cheer and to do his best work, either mental or physical.

Poor health, nervousness, irritability, lack of energy, despondency and the like can often be traced to an inadequate diet, which does not necessarily mean insufficient food.

The very best food can be made unpalatable or indigestible by improper cooking. Enough food is often consumed and the body still ill nourished because the food is eaten in forms that cannot be utilized by it. If food is not properly prepared, work as hard as they will, the faithful little body servants, the digestive enzymes, cannot change it into material useful to the body, and it is thrown out undigested with the waste products.

The fundamental reasons for the cooking of foods are to improve the appearance, to develop the flavor, to increase the digestibility and to kill bacteria. Unless the cook has accomplished all this her work is a failure.

There are certain definite principles which underlie the cooking of the different classes of foods, based upon their structures and composition. Since all cooking is carried on by means of some form of heat, it is necessary to know the effect of heat on each class of food in order to understand these principles.

Let us first consider the cooking of the protein foods. Much could be said about the cooking of food in that group, especially the meats, since the process differs according to the manner in which it is served. But for the present it is enough to say that protein is coagulated or thickened at a temperature somewhat below boiling, and that when cooked at this temperature it is tender, palatable and easy to digest, but if cooked at a high temperature for any length of time it becomes tough and very difficult to digest. Every one knows how unappetizing is the tough, leathery steak that has been submitted to intense heat for some time, or the white of an egg fried to a crisp in hot fat. Even the protein in milk is so chemically changed by long boiling that infants cannot digest it.

Fats, too, when submitted to high heat are chemically changed to fatty acids that are very irritating to the digestive tract, and often cause serious trouble.

But while the proteins and fats should not be subjected to high heat, the starchy foods, because of their structure, cannot be digested unless cooked, for a short time at least, at a temperature of boiling water.

The starch grain is enclosed in a little envelope which must be broken open before the starch can be reached by the digestive juices. This cell wall can be ruptured only by high heat. This may be the dry heat of the oven, when starch is changed to the familiar brown dextrine shown in the crust of bread or toast, or it may be the moist heat of boiling water. In the moist heat of boiling water the grain swells, and the covering expands and breaks, and the starch becomes thick and jelly like, and easy to digest. All foods that contain a high percentage of starch should be cooked at a high temperature long enough to break open this covering, and then the temperature lowered, and the cooking continued long enough to thoroughly cook the starch. We have pure starches in such foods as cornstarch, tapioca, sago and the like. These foods are inexpensive, and can be made palatable and nutritious by proper cooking. Most of the pure starchy foods should be cooked for ten minutes at a boiling point, and stirred constantly to prevent lumping or burning. The temperature may then be reduced, and the cooking continued for at least twenty minutes more. A starchy taste cannot be detected in starchy foods that are thoroughly cooked.

The starchy content of cereals is high, and they too should be cooked at a boiling point for at least ten minutes; but since they are not pure starch, and contain a large amount of fibrous material, they require long cooking to soften this cellulose, that all the starch grains may be released and thoroughly cooked. It is impossible to accomplish this in half an hour's cooking in the morning. The fireless cooker, found in so many homes, has made the serving of a hot properly cooked cereal a simple matter, but if one has no fireless the cereals may be cooked the day before. It is a waste to serve an undercooked cereal for it will not be thoroughly digested. Cereals should be cooked from one to two hours, depending upon the kind.

Starch has the power to become thick, and is often used as a thickening agent for sauces, gravies and the like. When the underlying principles of starch cookery are not well understood the resulting mixture is often lumpy. The starches that are used for thickening are generally cornstarch and flour, and the starch is in very tiny grains. As soon as high heat, like a boiling liquid, reaches one of these grains it breaks open and swells and becomes sticky. Unless the grains have been so separated that the heat will reach each one at the same time, a lumpy mass will result. The starch grains may be separated in three ways: first, by thoroughly mixing the starch with a cold liquid, like milk or water, to separate the grains before adding to a hot liquid; second, by mixing the starch or flour with fat to separate the grains; third, by mixing the starch with sugar to separate the grains. The last method can be used only when more sugar is used than starch, as in pudding sauces.

As to the minerals, these very essential substances are often thrown away. The minerals are soluble in water, and if foods, such as vegetables, which are rich in minerals are cooked in water, the water must be utilized in making soups and gravies, etc. It is better to steam or bake the vegetables, or to cook them in a very small amount of water and serve that water with them, or, if boiled, the peeling should not be removed until they are served. This is especially true in regard to potatoes.

In order to get the full food value from our foods, all starchy food, at the beginning of the cooking process, must be subjected to a temperature of boiling point, and then cooked sufficiently to thoroughly prepare them for the digestive enzymes. The proteins, however, should be cooked at a temperature below boiling; the fats should never be allowed to reach too high a temperature; while the minerals should not be dissolved and thrown away.

RECENT LEGISLATION.

Chapter 100.

An Act authorizing cities and towns to establish dental, medical and health clinics.

Be it enacted, etc., as follows:

Section 1. Cities and towns may establish and maintain dental, medical and health clinics, and in connection therewith may conduct campaigns of general education relative to matters of public health.

Section 2. Cities and towns, acting through their respective boards of health, may unite and cooperate for the purpose of carrying out the provisions of this act, and may provide for the maintenance of clinics as aforesaid in one or more of the cities and towns so uniting.

Section 3. All appropriations made for the purpose of carrying out the provisions of this act shall be expended under the direction of the board of health of the city or town, and clinics established hereunder shall be conducted subject to such rules and regulations as the board may establish.

Section 4. Chapter six hundred and seventy-seven of the acts of nineteen hundred and fourteen is hereby repealed. [*Approved March 3, 1920.*

CHAPTER 29.

AN ACT RELATIVE TO THE ANALYSIS OF LIQUOR BY THE DEPARTMENT OF PUBLIC HEALTH.

Be it enacted, etc., as follows:

The department of public health may decline to make analyses of liquor submitted under the provisions of chapter one hundred and ten of the acts of nineteen hundred and two or of chapter four hundred and eighty-four of the acts of nineteen hundred and fourteen, unless the department is satisfied that the analysis is to be used in connection with the enforcement of the laws of the commonwealth. [*Approved February 13, 1920.*

CHAPTER 185.

AN ACT RELATIVE TO THE SALE OF METHYL ALCOHOL.

Be it enacted, etc., as follows:

Section one of chapter five hundred and forty-one of the acts of nineteen hundred and ten, as affected by chapter three hundred and sixty of the General Acts of nineteen hundred and nineteen, is hereby amended by inserting after the word "alcohol" in the fifth line, the words: — or any drug or medicine intended for external use which contains any methyl alcohol, — so as to read as follows: — *Section 1.* Whoever, himself, or by his servant or agent, or as the servant or agent of any other person sells, exchanges or delivers any wood alcohol, otherwise known as methyl alcohol either crude or refined, or denatured alcohol which contains any methyl alcohol, or any drug or medicine intended for external use which contains any methyl alcohol, under or by whatever name or trade mark the same may be called or known shall affix to the bottle or vessel containing the same a label bearing the words, "Poison, Not for Internal Use", in red letters of uncondensed Gothic type not less than one fourth of an inch in height, and the same words, "Poison, Not for Internal Use", in stencilled letters or similar Gothic type of a size not less than three fourths nor more than one and one half inches in height for use on barrels and kegs. Whoever violates any provision of this section shall pay a fine of not less than fifty nor more than two hundred dollars for each sale in respect to which the violation occurs. [*Approved March 24, 1920.*

CHAPTER 297.

AN ACT RELATIVE TO THE COLD STORAGE OF FOODS.

Be it enacted, etc., as follows:

SECTION 1. Chapter six hundred and fifty-two of the acts of nineteen hundred and twelve, as amended by section two of chapter one hundred and forty-nine of the General Acts of nineteen hundred and seventeen, is hereby further amended by striking out section two and substituting the following: — *Section 2.* No person, firm or corporation shall maintain a cold storage or refrigerating warehouse without a license issued by the department of public health. Any person, firm or corporation desiring such a license may make written application to the department, stating the situation of its plant or plants. On receipt of the application the department shall cause an examination to be made of the sanitary condition of the plant, and if it is found to be in a sanitary condition and otherwise properly equipped for the business of cold storage, the department shall cause a license to be issued authorizing the applicant to maintain therein a cold-storage or refrigerating warehouse for the period of one year: *provided*, that a license fee of ten dollars shall be paid. The license fees so received shall be paid into the treasury of the commonwealth. In case any warehouse, or any part thereof, licensed under the provisions of this section, shall be deemed by the department of public health to be conducted in an unsanitary manner, the department shall close such warehouse or part thereof, until it shall be put in a sanitary condition, and the department shall also have power to suspend the license in case the required changes are not made within a reasonable time. Every such licensee shall furthermore submit, on or before the fifteenth day of each month, a report to the said department on a printed form to be provided by the department, stating the quantities of articles of food placed in cold storage during the month preceding, and also the quantities of articles of food held on the first day of the month in which the report is filed.

SECTION 2. Section four of said chapter six hundred and fifty-two is hereby amended by adding at the end thereof, the words: — All articles of food when deposited in cold storage, which have been previously stored in any other state or country, shall be plainly marked as provided in this section, with the dates of their original deposit in cold storage, — so as to read as follows: — *Section 4.* All articles of food when deposited in cold storage shall be marked plainly with the date of receipt on the containers in which they are packed, or, if not packed in containers, on or in connection with the articles, except fish. All articles of food when deposited in cold storage, which have been previously stored in any other state or country, shall be plainly marked as provided in this section, with the dates of their original deposit in cold storage.

SECTION 3. Section seven of said chapter six hundred and fifty-two, as amended by section five of said chapter one hundred and forty-nine, is hereby further amended by adding, at the end thereof, the words: — It shall be unlawful to alter, deface or remove any marking on cold storage food, which shows the date of its receipt in cold storage until after the food is finally withdrawn for the purpose of immediate sale for consumption, and it shall be unlawful to transfer the ownership of food in cold storage without previously making known to the purchaser of the same the date on which it was originally placed in cold storage, — so as to read as follows: — *Section 7.* It shall be unlawful to return to cold storage any article of food that has once been released from such storage for the purpose of placing it on the market for sale, but nothing in this section shall be construed to prevent the transfer of goods from one cold-storage or refrigerating warehouse to another, provided that such transfer is not made for the purpose of evading any provision of this act. It shall be unlawful to alter, deface or remove any marking on cold storage food which shows the date of its receipt in cold storage until after the food is finally withdrawn for the purpose of immediate sale for consumption, and it shall be unlawful to transfer the ownership of food in cold storage without previously making known to the purchaser of the same the date on which it was originally placed in cold storage.

Section 4. Sections seven and eight of chapter three hundred and fifty-one of the General Acts of nineteen hundred and nineteen are hereby repealed. [*Approved April 9, 1920.*

Chapter 238.

An Act relative to claims of cities and towns for the care of tuberculosis cases.

Whereas, The deferred operation of this act would greatly inconvenience the public, therefore it is hereby declared to be an emergency measure, necessary for the immediate preservation of the public convenience.

Be it enacted, etc., as follows:

Section 1. Chapter five hundred and ninety-seven of the acts of nineteen hundred and eleven, as amended in section one by section one of chapter six hundred and thirty-seven of the acts of nineteen hundred and twelve, by chapters fifty-seven and one hundred and ninety-seven of the General Acts of nineteen hundred and sixteen and by chapter two hundred and ninety of the General Acts of nineteen hundred and seventeen is hereby further amended by striking out said section one and substituting the following: — *Section 1.* Every city or town which places its patients suffering from tuberculosis in a county, municipal or incorporated tuberculosis hospital, or in a building or ward set apart for patients suffering from tuberculosis by a county, municipal or incorporated hospital shall be entitled to receive from the commonwealth a subsidy of five dollars a week for each patient who has a legal settlement therein, provided that such patient is unable to pay for his support, and that his kindred bound by law to maintain him are unable to pay for the same; but a city or town shall not become entitled to this subsidy unless, upon examination authorized by the department of public health, the sputum of the patient be found to contain bacilli of tuberculosis, nor unless the hospital building or ward be approved by said department; and the department shall not give such approval unless it has, by authority of law or by permission of the hospital, full authority to inspect the same at all times. The department may at any time withdraw its approval. In the case of hospitals having a bed capacity which, in the opinion of the said department, is in excess of the number of beds needed for the localities which these institutions serve for patients exhibiting tubercle bacilli in their sputum, the subsidy above provided for shall be allowed for such patients not exhibiting tubercle bacilli in their sputum as, in the joint opinion of the superintendent of the institution and the district health officer of the district in which the hospital is situated, are bona fide cases of consumption and have been in the institution more than thirty days.

Section 2. The department of public health shall certify in the case of each hospital, building or ward, approved by it as provided in the preceding section, the number of patients for whom the city or town is entitled to the said subsidy, and upon such certification the subsidy shall be paid from the treasury of the commonwealth in the same manner in which other claims against the commonwealth are paid.

Section 3. No claim hereunder for a subsidy covering more than ten days prior to the date when notice of the claim is received by the department of public health shall be approved. [*Approved April 2, 1920.*

WHY TUBERCULOUS PERSONS WITHOUT FUNDS SHOULD NOT LEAVE HOME.[1]

A FEW years ago the United States Public Health Service, which made an investigation here, estimated that at least 400 tuberculous persons without funds come to Denver every year, and that the number is increasing.

The mistaken idea that climate alone will cure tuberculosis brings us a large number of these people *without sufficient money for adequate treatment.* Many of them come here expecting to maintain themselves by doing light work. To find such work, however, or work of any kind for a person with active tuberculosis, is practically impossible. The demand is always many times greater than the supply.

There is no State or municipal sanatorium in Denver. Several private institutions care for patients at from $40 to $160 per month, with very few beds at the lower figure. The care of persons *without funds* is limited to the places listed below, which are constantly taxed to the utmost, and obliged to turn away many applicants: —

1. There are two free Jewish sanatoria with a capacity of 150 beds each, which accept a certain proportion of Gentiles. Patients must apply from their place of departure, and await notification before coming to Denver. The waiting lists are always long, and it is usually months before an applicant can be admitted.

2. The County Hospital and the County Poor Farm have a combined capacity of 59 beds. Only those persons having at least one year's legal residence in Denver are eligible for admission. At the County Hospital the cases accepted are chiefly the far advanced and the dying.

3. There is, besides, a small tent colony for indigent tuberculous men, located on the outskirts of the city, and maintained by public subscription.

The tuberculous patient coming to Denver should have sufficient funds for at least two years' good care. A few weeks or months in a lodging house or even in a sanatorium, seldom bring lasting benefit, and often are merely a waste of time and money. Plenty of good food, rest, fresh air and medical attention are absolutely necessary for recovery, and must be continued over a sufficient length of time to secure an arrest or a cure. A patient lacking funds must do without these essentials; and the resultant anxiety, homesickness, hopelessness, and desperate necessity of working before he is able, especially if he has a dependent family, usually lead to a breakdown far more serious than the original condition which brought him here.

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[1] Reprinted from a leaflet of the Denver Anti-Tuberculosis Society.

Many authorities agree that a cure is facilitated by adding a favorable climate to the essentials mentioned above. The patient, however, who is unable to pay for food, rest and proper care in this climate, and can obtain them at home, has a better chance of recovery there.

If climate alone could save these sufferers, Denver would welcome them, not only for humanitarian reasons, but because of the debt she owes to the tuberculous who have come here with sufficient funds to regain their health, and who have helped to make her what she is. But for the best interests of those tuberculous who have no funds, their migration to the West should be checked. Too often they leave their best opportunities for care behind them, and, sacrificing their all, start out on the quest for health, which, as we know, in almost every instance ends in death.

A number of communities in different parts of the country are now making an earnest effort to control tuberculosis among the *indigent* and those *without sufficient funds.* It is to be hoped that more States will awaken to their individual responsibilities, and will build State sanatoria with capacity to care for *all their indigent* tuberculous, maintaining these patients not only long enough to arrest the progress of the disease, but also providing after-care in places where such patients could be protected from relapse while gradually taking up work again.

Will not the Anti-Tuberculosis Societies and the boards of health throughout the country plan a definite program to retain their own indigent tuberculous, and persuade them to enter their own State sanatoria or to take proper treatment in their own homes?

THE COMMONHEALTH.

Monthly Bulletin of the Massachusetts Department of Public Health.

Sent Free to Any Citizen of the State.

Merrill E. Champion, M.D., Director of Division of Hygiene, Editor.
Room 546, State House, Boston, Mass.

Health Legislation. — Several important matters relating to the public health came up for legislation this year. Two of these, namely, the so-called health education bill, and the school nurse bill, were defeated.

One cannot but deplore the misunderstandings which abounded regarding the health education measure. In reality, this extremely simple proposal to teach the ordinary rules of hygienic living to the school child in such a way that they would become ingrained as good habits developed an aura of doubts and inferences quite bewilderingly alien to the subject. It would seem as if a little more of Webster's Dictionary and a little less of impressionistic word painting might have helped matters a bit.

The school nurse bill was designed to supplement our present law relating to medical school inspection. In 1906, when the original law was passed school nurses were practically an unknown quantity, consequently no requirement regarding them was made. Since then the school nurse has become indispensable to adequate medical school inspection. At present a roundabout method must be employed to have a school nurse appointed legally. The bill before the legislature this year would have made school nursing obligatory. There is little doubt in the minds of those familiar with public health work that school nursing ought to be obligatory for the sake of the health of the children. But the bill failed of passage.

A far-reaching bill which did become law this session of the legislature (Chapter 100, Acts of 1920) was that which allows cities and towns to conduct campaigns of general education relative to matters of public health, medical and health clinics, and in connection therewith.

This act is important in that it definitely stamps with legislative approval a type of health work unknown when our basic health legislation was enacted. The old idea that the chief function of a board of health is to tack up quarantine placards and to bury stray animals is fast disappearing. The really constructive work of the future health officer must be with the well rather than with the sick, and must not be limited to the control of communicable disease. The health officer must be a teacher as well as an administrator of health regulations.

The new law is undoubtedly broad enough to cover the municipal control not only of dental clinics but also of nutritional clinics, prenatal, well-baby and other child welfare conferences, and health centers in general. It is a distinct recognition of community responsibility for the health of the citizens.

The Needs of the Rural Community. — It is a well-known fact that the public health needs of the urban community are being met far more generally than are the needs of the rural community. It is only fair to say, of course, that in many respects the urban needs are greater. Man lives a more or less hot-house existence in the city, and must devise ways to overcome this handicap. A safe municipal water supply is a necessity to the city or recurring epidemics will result, while the dweller on the farm often needs only a carefully placed well. None the less, the rural districts are suffering from a lack of doctors, nurses and teachers.

Quite recently a newspaper article vividly called attention to the shortage of physicians in certain parts of Massachusetts. The shortage of nurses is equally or even more striking. A campaign successful to a degree has been waged in this State to get municipalities to appropriate money for public health nursing service, yet, in many instances nurses have not been forthcoming who are willing to work in the country. Evidently the lure of the city is too strong. And yet it is easy to demonstrate that at least a fair proportion of the best trained nurses should go to the rural sections of the State. They are needed as leaders to stimulate new public health activity, and they are needed for their technical knowledge, because the nurse employed by the rural municipality often is health officer as well as nurse.

The trouble seems to be that we need better educated nurses, women with sufficient preliminary education to have the sources of enjoyment which spring only from a good intellectual equipment. Add to this a good out of doors hobby and the isolation of the country loses its terrors. There are worse things than being a medical missionary in rural Massachusetts.

The Statutes on Nutritional Work. — In view of the general interest in the extension of nutritional work, especially for children, it may be timely to place in juxtaposition three laws which have a bearing on the subject: —

1. School Lunches for which a Charge is made: According to General Acts of 1919, chapter 292, section 10, "The school committee of any city or town may cause to be prepared and may sell lunches at one or more school buildings for the pupils and teachers of the public schools at such prices as it may deem reasonable.

2. Free School Lunches: Chapter 575 of the Acts of 1913 reads as follows: — "The city council of a city and selectmen of a town may provide meals or lunches free or at such price, not exceeding the cost, as they may fix, for children attending its public schools, and cities and towns may appropriate money for this purpose.

"This act shall be submitted to the voters of any city or town at the municipal election in any year if a petition to that effect, signed by not less than five per cent of the voters, is filed with the city clerk or town clerk, as the case may be, not less than one month before said election; and if accepted by a majority of the voters voting thereon it shall take effect in such city or town. Otherwise this act shall not take effect."

3. Nutritional Clinics: According to the Acts of 1920, chapter 100; — "Cities and towns may establish and maintain dental, medical and health clinics, and in connection therewith may conduct campaigns of general education relative to matters of public health.

"Cities and towns, acting through their respective boards of health, may unite and co-operate for the purpose of carrying out the provisions of this act, and may provide for the maintenance of clinics as aforesaid in one or more of the cities and towns so uniting.

"All appropriations made for the purpose of carrying out the provisions of this act shall be expended under the direction of the board of health of the city or town, and clinics established hereunder shall be conducted subject to such rules and regulations as the board may establish.

"Chapter six hundred and seventy-seven of the acts of nineteen hundred and fourteen is hereby repealed."

Communicable Disease Tables. — After this issue of the Commonhealth, the printing of the communicable disease tables ordinarily carried at the end of our bulletin will be discontinued. Monthly compilations in a modified form will be prepared and sent to boards of health and others interested enough to write for them. Our figures, of necessity, have always been in arrears, and have not had news value. Under the revised scheme it is hoped that these defects can be corrected.

NEWS ITEMS.

North Midland District.

A meeting of the Home Welfare Club of West Somerville was held in the church parlors Thursday, April 1. Miss Margaret Robinson of the Middlesex County Farm Bureau talked on "Making Children Worth While." Miss Helen Reilly of the State Department of Public Health gave a talk and demonstration on infant hygiene. There were 50 mothers present and a social hour followed.

Northeastern District.

Mrs. Mary E. Roundy has been assigned to take over the school work in Middleton one day a week until the close of the school session in June.

Eastern District.

The school committee of the town of Norwell has obtained the services of Mrs. Sauer to start community nursing. Mrs. Sauer is a resident of Norwell, and is therefore interested, not only from a public health nurse's point of view, but also as a resident of the town.

Berkshire District.

Cummington is planning to re-establish its dental clinic in the near future. This clinic will be for the use of both children and adults, and will be open one day each week. So far as is known, this town is the smallest in the State to bring such a dental service to its citizens.

Connecticut Valley District.

Miss Harriman, Home Demonstration Agent of Hampden County Farm Bureau, has given valuable assistance to the citizens of Huntington by helping them work out a satisfactory solution of the noonday lunch problem in the schools. Lunches are served to about 50 pupils, and articles of food served include not only soup or cocoa, but also sandwiches and simple desserts. The girls in the schools have manifested such a lively interest in this work that it is hoped it will be possible to introduce a domestic science room, with a teacher, into the fall curriculum.

Both Northampton and Florence have a well-equipped dental clinic. A very satisfactory arrangement has been made whereby Dr. Sheldon and his assistant are able to serve both of these clinics, working three mornings in Northampton and two mornings in Florence.

South Midland District.

Plans are under way to enlarge the dental accommodations in Worcester to supplement the excellent work which is being done by the dental clinic of the Worcester Memorial Hospital. This step has been considered necessary on account of the large amount of work to be done.

Northeastern District.

Haverhill featured a "Dental day" on May 13 for the purpose of stimulating interest for a larger dental clinic. Talks were given in the schools, and there was also an evening meeting with addresses on the subject of oral hygiene.

REPORT OF DIVISION OF FOOD AND DRUGS.

During the months of March and April, 1920, samples were collected in 104 cities and towns.

There were 1,887 samples of milk examined, of which 470 were below standard, 21 samples had a portion of the cream removed, 104 contained added water, 1 was skimmed milk above the standard, and 2 were skimmed milk below the legal standard.

There were 204 samples of food examined, of which 39 were adulterated. These consisted of 22 samples of clams which contained added water; 10 samples of sausage, 9 of which contained starch in excess of 2 per cent, and 1 contained coloring matter; 1 sample of olive oil which contained cottonseed oil; 1 sample of vinegar with acidity less than 4 per cent; and 5 samples of eggs, 4 of which were cold storage, not so marked, and 1 was a sample of stale eggs sold as fresh eggs.

There were 21 samples of drugs examined, of which 3 were adulterated. These consisted of 2 samples of citrate of magnesium which contained magnesium sulphate; and 1 sample of spirits of camphor low in the active ingredient.

There were 13 hearings held and 8 warnings issued pertaining to violations of the food and drug laws.

The police departments submitted 172 samples of liquor for examination, 139 of which were above 1 per cent in alcohol. The police departments also submitted 51 samples of poisons for examination, 14 of which were cocaine, 1 cocaine hydrochloride, 26 morphine, 2 morphine sulphate, 1 a morphine derivative, 1 opium, 1 strychnine, 1 codeine, 1 heroin, and 3 were samples examined for poison with negative results.

There were 36 convictions for violations of the law, $825 in fines being imposed.

Dan Barberian of Andover; Alexander Silva of Danvers; James Joyce of Salem; Fanny Tucker of Southbridge; Louis Sykes of Norwood on 4 counts; the Union News Company; and Frank Maringo of Fall River were all convicted for violations of the milk laws. Markos Alexion of New Bedford; Fotios Geas of Fitchburg; Morris Singer, Knight & Co.; National Packing Company on 2 counts; Cudahy Packing Company on 3 counts, all of Boston; John W. Briggs of Methuen; and Paul Wilner of Haverhill were all convicted for violations of the food laws. Paul Wilner of Haverhill appealed his case. Philip F. Blay of Waltham was convicted for false advertising. Santi Leonardi of Lawrence; Guiseppi Caresi and Armour & Co. of Boston; and Usave Stores, Inc., of Waltham were all convicted for misbranding. Armour & Co. of Boston appealed their case. George Berube of Lawrence; Max Cohen of Waltham; Max Juk, Cann's Sea Grill, Inc., Joseph Cefalu; and Patrick Desisto of Boston; and the G. W. Reid Company of Brockton were all convicted for violations of the cold-storage law. Max Juk of Boston and the G. W. Reid Company of Brockton appealed their cases. Edward S. Fobes; Iner Pederson; and George Weaver of Acton were all convicted for violations of the slaughtering laws.

In accordance with the acts of 1902, chapter 272, the following is the list of articles of adulterated food collected in original packages from manufacturers, wholesalers or producers: —

Watered milk was obtained as follows: 14 samples, produced by Joseph Tatro of South Hadley Centre; 10 samples, produced by Manuel Reposa of Somerset; 5 samples each, produced by Frank Marino of Fall River and James Joyce of Salem; 4 samples each, produced by Alexander Silva of Danvers and Henry A. Baker of Rockland; 2 samples each, produced by Ernest F. Koehler of South Berlin and John Stone of Sudbury; 1 sample, produced by Louis Wimmers of South Berlin; and 8 samples, produced by Lawson H. and Lewis E. Billings of Kingston.

Milk having the cream removed was obtained as follows: 1 sample each, produced by Kate Baakki and Frederica Martin of Maynard.

Samples of sausage which contained starch in excess of 2 per cent were obtained as follows: 3 samples from the Cudahy Packing Company of Boston; 2 samples each from the National Packing Company of Boston and Eugene E. Barthel of Gardner; and 1 sample from Remi Laprade of Gardner. One sample of sausage which contained coloring matter was obtained from H. L. Handy Company of Springfield.

One sample of olive oil which contained cottonseed oil was obtained from Guiseppi Caresi of Boston.

One sample of vinegar which contained less than 4 per cent acetic acid was obtained from the Standard Preserving Company of Boston.

Samples of clams which contained added water were obtained as follows: 1 sample each from C. G. Guard of Lynn; the Malden Public Market and the Jenkins Fish Market of Malden; George M. Anthony and Charles W. Coombs of Chelsea; and Leavitt Brothers of Pine Point, Me. Two samples of watered clams were obtained from William J. Wilcox of Chelsea.

One sample of spirits of camphor low in the active ingredient was obtained from Roy A. Peckham of Somerville.

There were 19 confiscations made, consisting of 30 pounds of decomposed eggs; 210 pounds of decomposed turkey; 150 pounds of decomposed poultry; 3,620 pounds of decomposed beef; 940 pounds of tainted beef; 150 pounds of dried-out beef; 183 pounds tainted pork; 130 pounds of dried-out pork; 100 pounds of tainted veal; 475 pounds of tainted sausage; 490 pounds of decomposed flounders; 420 pounds of dried-out sardine herring; 1,096 pounds of decomposed swordfish; 160 pounds of decomposed whiting; and 1,746 pounds of dried-out miscellaneous fish.

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of February, 1920: 265,350 dozens of case eggs, 112,815 pounds of broken-out eggs, 331,897 pounds of butter, 652,862 pounds of poultry, 2,610 pounds of game, 9,599,909 pounds of fresh meat and fresh meat products, and 723,442 pounds of fresh food fish.

There were on hand March 1, 1920, 28,020 dozens of case eggs, 418,249 pounds of broken-out eggs, and 2,063,133 pounds of butter.

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of March, 1920: 202,880 dozens of case eggs, 242,572 pounds of broken-out eggs, 1,853,460 pounds of butter, 711,836 pounds of poultry, 693 pounds of game, 9,992,364 pounds of fresh meat and fresh meat products, and 1,554,124 pounds of fresh food fish.

There were on hand April 1, 1920, 68,610 dozens of case eggs, 380,317 pounds of broken-out eggs, and 1,544,754 pounds of butter.

REPORT UPON THE WORK OF THE BACTERIOLOGICAL LABORATORY.

March, 1920.

The following gives the number of bacteriological examinations made in the laboratory of the Department of Public Health during the month of March, 1920: —

	Number of Examinations.	Diagnosis.		Release.	
		Positive.	Negative.	Positive.	Negative.
Diphtheria,	1,169	88	570	126	385

	Number of Examinations.	Positive.	Negative.	*Atypical.
Tuberculosis,	425	89	336	
*Typhoid fever (Widal test),	80	12	63	5
Typhoid fever (culture test),	80	8	72	
Malaria,	3	–	3	
Gonorrhea,	214	24	190	
Pneumonia,	59	–	–	
Miscellaneous,	16	–	–	

Total number of examinations made, 2,046.

April, 1920.

The following gives the number of bacteriological examinations made in the laboratory of the Department of Public Health during the month of April, 1920: —

	Number of Examinations.	Diagnosis.		Release.	
		Positive.	Negative.	Positive.	Negative.
Diphtheria, ...	1,056	82	565	120	289

	Number of Examinations.	Positive.	Negative.	*Atypical.
Tuberculosis, ...	387	81	306	
*Typhoid (Widal test), ...	97	23	71	3
Typhoid (culture test), ...	50	1	49	
Malaria, ...	1	–	1	
Gonorrhea, ...	160	18	142	
Pneumonia, ...	39	–	–	
Miscellaneous, ...	17	–	–	

Total number of examinations made, 1,807.

QUARTERLY REPORT UPON THE DISTRIBUTION OF BIOLOGICAL PRODUCTS AND DIAGNOSTIC OUTFITS.

The following gives the total number of biological products and diagnostic outfits distributed by the State Department of Public Health during the three months ending March 31, 1920: —

Biological Products.

Diphtheria antitoxin: —

12,000 units (for the Boston City Hospital), ...	140 bottles.
6,000 units (for the Boston City Hospital), ...	48 bottles.
2,000 units (for the Boston City Hospital), ...	48 bottles.
12,000 units, ...	425 bottles.
6,000 units, ...	1,488 bottles.
3,000 units, ...	12,160 bottles.
1,000 units, ...	2,468 bottles.

Smallpox vaccine: —	
Capillary tubes,	15,659
Bulk,	2,200
Typhoid vaccine: —	
Ampoules,	1,020
Bulk,	1,550
Typhoid-paratyphoid vaccine: —	
Ampoules,	2,557
Bulk,	3,850
Paratyphoid vaccine: —	
Ampoules,	165
Antimeningitis serum,	1,397 bottles.
Silver nitrate solution,	13,930 ampoules.

Diagnostic Outfits.

Diphtheria culture outfits,	5,210
Tuberculosis sputum outfits,	1,627
Pneumonia outfits,	208
Widal outfits,	288
Typhoid culture outfits,	325
Malaria-gonorrhea outfits,	422

REPORT OF THE SUBDIVISION OF VENEREAL DISEASES.

March, 1920.

Number of ampoules of arsphenamine distributed,	2,748
Number of cases of gonorrhea and syphilis reported by number,	801
Number of smears for gonorrhea examined during the month,	209
Number of examination fixation tests made of G. C.,	85
Number of Wassermann fixation tests made,	3,362

Statistical Report of Cases reported by Name.

Cases active March 1: —	
Gonorrhea,	116
Syphilis,	29
Unknown,	1
Total,	146

	Gonorrhea.	Syphilis.	Both.
Cases reported by name during month,			114
A. Reported to local board of health: —			
New,	81	24	1
Reported second time,	4	1	–
Transferred,	2	1	–
Total, 114.	87	26	1

B. Not reported to local board of health, as believed to be non-infectious (not included in statistics of active cases): —

	Gonorrhea.	Syphilis.
New,	7	4
Reported second time,	2	1
Total, 14.	9	5

Cases closed during month: —

Gonorrhea,	107
Syphilis,	27
Total,	134

Cases active April 1: —

Gonorrhea,	96
Syphilis,	28
Unknown,	1
Both,	1
Total,	126

Old cases reported during March as returned to treatment by the Boston Board of Health: —

Gonorrhea,	3
Syphilis,	2
Total,	5

Analysis of 134 Closed Cases reported by Name, classified by Disposition made.

Replaced under treatment: —		
G. C.	Arlington 1, Fall River 1, Lawrence 1, Lynn 1, New Bedford 1, Somerville 1, Springfield 2, Westwood 1, Boston 17,	26
S. P.	Braintree 1, Lowell 2, Cambridge 1, Springfield 1, Boston 2,	7
Failed to return to treatment: —		
Unable to locate: —		
G. C.	Cambridge 1, Fall River 1, Lawrence 1, Lowell 1, Lynn 2, Malden 1, Boston 14,	21
S. P.	Arlington 1, Lynn 1, Mansfield 1, Essex 1, Quincy 1, Boston 1,	6
Removal from city: —		
G. C.	Somerville 1, Boston 4,	5
S. P.	Boston 1,	1
No treatment needed: —		
G. C.	Arlington 1, Littleton 1, Watertown 1, Boston 4,	7
S. P.	Boston 1,	1

No adequate report received: —	
G. C. Haverhill 1, Peabody 1, Revere 4, Somerville 1, Worcester 2, Woburn 1, Boston 40,	50
S. P. Boston 9,	9
February gonorrhea case reported second time in March: —	
G. C. Boston 1 (disposition of this case already in statistics above),	1
Total,	134

Old cases reported during March as returned to treatment by the Boston Board of Health: —	
Gonorrhea,	3
Syphilis,	2
Total,	5

Analysis of 134 Closed Cases reported by Name, classified by Referring Agency.

Transferred to another board of health: —		
Syphilis,	1	
Gonorrhea,	2	
	—	3
Case included in statistics below: —		
Gonorrhea,		1
Boston Dispensary: —		
Returned to treatment,	12	
Unable to locate,	13	
No treatment needed,	2	
Adequate report not received,	29	
	—	56
Massachusetts General Hospital: —		
Returned to treatment,	6	
Unable to locate,	4	
No treatment needed,	2	
Adequate report not received,	13	
	—	25
New Bedford Board of Health clinic: —		
Returned to treatment,		1
Boston City Hospital: —		
Returned to treatment,	2	
Unable to locate,	3	
No adequate report received,	6	
	—	11
Peter Bent Brigham Hospital: —		
Unable to locate,	1	
No adequate report received,	1	
	—	2

Lynn Hospital: —		
Unable to locate,		1
Homeopathic Hospital: —		
Placed under treatment,		1
Private physicians: —		
Returned to treatment,	12	
No treatment needed,	4	
No adequate report received,	10	
Unable to locate,	7	
	—	33
Total,		134

April, 1920.

Number of ampoules of arsphenamine distributed,	2,250
Number of cases of gonorrhea and syphilis reported by number,	787
Number of smears for gonorrhea examined,	160
Number of examination fixation tests made of G. C.,	169
Number of Wassermann fixation tests made,	3,210

Statistical Report of Cases reported by Name.

Cases active April 1: —	
Gonorrhea,	96
Syphilis,	28
Unknown,	1
Both,	1
Total,	126

Cases reported by name during month,		87
A. Reported to local board of health: —	Gonorrhea.	Syphilis.
New,	65	11
Reported second time,	8	1
Transferred,	1	1
	—	—
Total, 87.	74	13

B. Not reported to local board of health, as believed to be non-infectious (not included in statistics of active cases): —

Gonorrhea (new),	1
Cases closed during month: —	
Gonorrhea,	84
Syphilis,	30
Both,	1
Unknown,	1
Total,	116

Cases active May 1: —

Gonorrhea,	86
Syphilis,	11
Total,	97

Analysis of 116 Closed Cases reported by Name, classified by Disposition made.

Replaced under treatment: —		
G. C.	Cambridge 2, Fall River 2, Lawrence 1, Lowell 1, Lynn 2, Newton 1, Somerville 3, Springfield 4, Boston 15,	31
S. P.	Agawam 1, Fall River 2, Lowell 1, Springfield 9, Westfield 1, Boston 2,	16
Both.	Fall River 1,	1
Failed to return to treatment: —		
Unable to locate: —		
G. C.	Brookline 1, Cambridge 1, Holyoke 1, Lynn 1, Springfield 3, Boston 14,	21
S. P.	Springfield 1, Watertown 1,	2
Removal from city: —		
G. C.	Lowell 2, Lynn 1, Springfield 5, Boston 5,	13
S. P.	Lowell 1, Springfield 4,	5
Transferred to active cases: —		
G. C.	Chelsea 1,	1
No treatment needed: —		
G. C.	Cambridge 1, Boston 2,	3
S. P.	Boston 2,	2
No adequate report received: —		
G. C.	Fall River 1, Revere 2, Somerville 1, Taunton 1, Worcester 2, Boston 8,	15
S. P.	Hanover 2, Haverhill 1, Taunton 2,	5
Unknown: —		
	Revere 1,	1
Total,		116

Old cases reported by boards of health during March as replaced under treatment: —

	Gonorrhea.	Syphilis.	Both.
Boston,	17	5	1
Arlington,	–	1	–
Chelsea,	–	1	–
Lynn,	1	–	–
Worcester,	1	1	–
	19	8	1

Total, 28.

Analysis of 116 Closed Cases reported by Name, classified by Referring Agency.

Transferred to another board of health: —		
Gonorrhea,		1
Boston Dispensary: —		
Returned to treatment,	11	
Unable to locate,	14	
No treatment needed,	1	
No adequate report received,	3	
	—	29
Massachusetts General Hospital: —		
Returned to treatment,	4	
Unable to locate,	1	
No treatment needed,	1	
No adequate report received,	1	
	—	7
Boston City Hospital: —		
Returned to treatment,	4	
Unable to locate,	4	
No treatment needed,	1	
No adequate report received,	4	
	—	13
Peter Bent Brigham Hospital: —		
Returned to treatment,	2	
No treatment needed,	1	
	—	3
Massachusetts Homeopathic Hospital: —		
No treatment needed,		1
Springfield venereal disease clinic: —		
Returned to treatment,	14	
Unable to locate,	12	
	—	26
Lowell venereal disease clinic: —		
Returned to treatment,	2	
Unable to locate,	3	
	—	5
Fall River clinic: —		
Returned to treatment,		3
Lynn Hospital: —		
Returned to treatment,	1	
Unable to locate,	2	
	—	3

Private physicians: —		
Returned to treatment,	8	
Unable to locate,	4	
No adequate report received,	13	
	—	25
Total,		116

RÉSUMÉ OF COMMUNICABLE DISEASES.

March, 1920.

General Prevalence.

During March the incidence of communicable disease in the State was practically the same as in February, excluding influenza and lobar pneumonia cases.

A total of 11,816 cases was reported, of which 2,214 were cases of influenza. By the end of the month the influenza epidemic had definitely disappeared after extending over a period of ten weeks.

Chicken Pox. — Only 374 cases of chicken pox were reported, or 600 fewer cases than the January total for this disease. Most of the adult cases were carefully investigated to be sure they were not mild smallpox cases.

Diphtheria. — A total of 559 cases was reported, or 81 less than the previous month. The campaign against diphtheria since 1918 has resulted in more rigid control of, and a consequent lowering of the incidence of the disease. The totals for February and March were lower than for any year since 1914.

Dog Bite. — There were no dog bite cases reported during March. In January and February the increase in the number of animal rabies cases, combined with an increase in human dog bite cases, caused many communities to place a restraining quarantine on dogs. The quarantine apparently has had the desired effect, for there was a decrease in animal rabies cases also during the month.

The department furnishes the material free to physicians for administering the anti-rabic treatment to individuals bitten.

Influenza. — The end of the epidemic came the last week of the month, when there were 147 cases of influenza reported, whereas 1,144 cases were reported during the first week. There was a monthly total of 2,214 cases, a great decrease since February, when 28,349 cases were reported.

Measles. — This disease had its low point in 1919 following the sextennial high point in 1918. This year is showing a reaction, the incidence of the disease for March being approximately the average for the past five years.

Pneumonia, Lobar. — There were only 600 cases reported compared with 1,799 cases in February. Although the influenza epidemic was responsible for the high total in February, the March total is about the normal incidence of the disease.

Scarlet Fever. — With 1,223 cases reported in March, there were 144 more than in February. It indicates that the population group susceptible to the disease is sufficiently large to furnish material for an epidemic unless health officers are constantly alert to the dangers of this disease. Prompt action in isolating cases and quarantining contacts will check the spread of this disease.

Typhoid Fever. — Thirty-three cases of typhoid fever, combined with the cases reported in January and February, makes a total of only 117 cases for the first quarter, the lowest in the history of Massachusetts. Of the 33 March cases, 3 were infected by contact with a clinical case, 1 was infected outside the State, no source of infection was found in 19 cases, and no epidemiological information is on hand for 10 cases.

Whooping Cough. — Every other year is a "high incidence year" in whooping cough. There were 1,142 cases reported in March, and when it is realized that last year there were three times as many deaths from this disease as from typhoid fever in Massachusetts, the seriousness of the problem is apparent.

Rare Diseases.

Anterior poliomyelitis was reported from Boston, 1; Lawrence, 1; Leominster, 1; Newton, 1; total, 4.

Anthrax was reported from Chelsea, 1.

Dysentery was reported from Newton, 1.

Epidemic cerebrospinal meningitis was reported from Boston, 6; Brockton, 1; Fall River, 1; Hudson, 1; Lawrence, 1; Lowell, 3; Lynn, 2; New Bedford, 3; Peabody, 1; Plymouth, 1; Spencer, 1; total, 21.

Malaria was reported from Winthrop, 1.

Septic Sore Throat was reported from Attleboro, 1; Boston, 4; Newburyport, 1; Newton, 1; Peabody, 1; Winthrop, 1; total, 9.

Trachoma was reported from Athol, 1; Boston, 3; Fairhaven, 4; Fall River, 1; Holyoke, 1; Lowell, 1; Montague, 1; Uxbridge, 1; total, 13.

Distribution.

All Communicable Diseases.

	March, 1920.	March, 1919.
Total cases (all causes),	11,816	9,734
Case rate per 100,000 population,	292.9	245.3

Certain Prevalent Diseases.

	March, 1920.	March, 1919.	Cities and Towns noticeably exceeding their Median Endemic Indices.[1]		
Diphtheria: —					
Total cases,	559	659	Haverhill,	(10)	27
Case rate per 100,000 population,	13.9	16.6			
			Arlington,	(3)	46
			Belmont,	(3)	26
			Boston,	(689)	892
			Bridgewater,	(1)	82
			Everett,	(28)	129
			Greenfield,	(1)	31
			Haverhill,	(30)	179
			Holyoke,	(14)	77
Measles: —			Lexington,	(2)	23
Total cases,	3,011	778	Malden,	(19)	70
Case rate per 100,000 population,	74.6	19.6	Melrose,	(8)	103
			Middleborough,	(5)	28
			Newton,	(49)	201
			Northfield,	(0)	20
			Salem,	(12)	59
			Watertown,	(6)	49
			Whitman,	(1)	77
			Winthrop,	(14)	53
			Somerville,	(15)	114
			Springfield,	(83)	156
			Concord,	(1)	21
			Easthampton,	(0)	15
			Gloucester,	(1)	23
Scarlet fever: —			Lynn,	(18)	85
Total cases,	1,223	719	New Bedford,	(12)	32
Case rate per 100,000 population,	30.3	18.1	Newton,	(5)	24
			Quincy,	(11)	36
			Salem,	(4)	17
			Weymouth,	(1)	13
			Worcester,	(22)	124
Typhoid fever: —					
Total cases,	33	47			
Case rate per 100,000 population,	.8	1.2			
Whooping cough: —			Boston,	(93)	338
Total cases,	1,142	459	Cambridge,	(20)	160
Case rate per 100,000 population,	28.3	11.6	Framingham,	(0)	29
			Newton,	(17)	43
			Winthrop,	(1)	27
Tuberculosis, pulmonary: —					
Total cases,	597	676			
Case rate per 100,000 population,	14.8	17.0			
Tuberculosis, other forms: —					
Total cases,	89	63			
Case rate per 100,000 population,	2.2	1.6			

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[1] The median endemic index is obtained by arranging in arithmetical sequence the monthly totals of reported cases for the past five years and selecting the middle figure. The numbers in parentheses after the names of each city and town indicate the median endemic index for that city or town; the numbers without parentheses indicate the cases reported during the current month.

Interstate Reciprocal Notifications in March, 1920.

Disease and Locality of Notification.	Health Authority referred to —	Why referred.
Typhoid fever; Brockton, .	State Department of Health, Albany, N. Y.	Patient visited friend in New York City who was convalescing from paratyphoid.
Typhoid fever; Williamstown,	State Board of Health, Concord, N. H.	Patient visited Dartmouth College two weeks previous to onset of disease.
Typhoid fever; Cambridge, .	State Department of Health, Augusta, Me.	Patient visited Maine previous to onset of disease.
Typhoid fever; Fall River, .	Provincial Health Officer, Montreal.	Patient went to Terrebonne to attend father's funeral previous to onset of disease. Father died of typhoid.

Rabies.

In January and February the number of cases of rabies in animals, dogs, cats, cows and pigs increased in the Southeastern and Eastern Health Districts to a marked degree, so that it became necessary to order dogs in many communities to be restrained and not allowed to roam at large. The fact to remember in rabies is that once a person develops symptoms of rabies, there is no hope. Every human case dies. For this reason the anti-rabic prophylactic treatment is the only hope to escape the disease when bitten or "licked" by a rabid animal.

It is necessary, in order to stamp out rabies, that all animals, dogs in particular, who show any symptoms of rabies, or are suspected of being "mad," or that have been bitten by "strange" dogs, be restricted by confining them for at least four weeks to watch for symptoms. "Strange" dogs not known in a community should be caught and disposed of unless bearing the owner's name.

In case a dog is suspected after biting a person he should not be killed at once, but should be watched for a few days for the appearance of symptoms of rabies. After they appear he should be killed without injury to the head, and the head sent to the State laboratory for examination of the brain.

If the laboratory reports that it is "suspicious" or "positive" for Negri bodies, the anti-rabic treatment should be instituted without delay. This treatment may be obtained free from the Massachusetts Department of Public Health through the State District Health Officers, or by direct application to the Department. The product is furnished the Department by the United States Public Health Service.

The danger from a single rabid dog is seen, when in Taunton, in February, one dog ran through the streets and bit twelve persons.

Persons bitten by "Positive" Dogs in Massachusetts.

YEAR.	Persons bitten.	Number taking Anti-rabic Treatment.
1916,	24	24
1917,	26	26
1918,	35	17
1919,	45	42
1920,	27[1]	26

[1] January to March 31.

It is an odd fact that there are more cases of animal rabies during the cold months than during the warm months.

The communities will be fortunate, indeed, if the cases of rabid dogs do not increase with the advent of melting snows and spring, at which time dogs will begin to wander farther afield.

APRIL, 1920.

General Prevalence.

There was a total of 10,594 cases of disease reported to the Department during this month, a decrease compared with the March total.

Of the major diseases, diphtheria and lobar pneumonia showed an appreciable decrease in cases, but measles, scarlet fever and typhoid showed an increase in number of reported cases when compared with the preceding month. The increase in these respiratory infections was probably due in part to the disappearance of the snow, together with the irritation and minute abrasions caused by dust, thus affording a method of infection.

Diphtheria has shown a steady decrease since the high point of the disease was reached in December, 1919. The incidence of this disease is the lowest since 1914. There were 471 cases reported during this month.

Dog Bite. — There were 10 cases reported, 7 of which were bitten by a single dog in Grafton, 2 cases were reported from Lowell and 1 from Taunton. The reporting of rabies after the absence of the disease for a period of time indicates the need of great care in carrying out preventive methods against the disease, and necessity for administering anti-rabic treatment to prevent human cases.

Measles. — A marked increase occurred in the cases reported compared with the incidence of the disease in March. There were 4,151 cases in April, or 1,140 cases more than the preceding month.

Pneumonia, Lobar. — There were 387 cases reported, a smaller number than the March total, but for some unknown reason the cases reported increased the last two weeks.

Scarlet Fever. — As in the case of measles, an increase occurred in the cases of this disease reported. There were 1,357 cases of scarlet fever reported during this month as compared with 1,223 reported during March.

Typhoid Fever. — Forty-six cases of typhoid were reported during this month, an increase of 13 cases over the March total.

Whooping Cough. — There were 1,088 cases reported, 54 less than during the preceding month.

Rare Diseases.

Anterior poliomyelitis was reported from Amherst, 1.

Anthrax was reported from Lawrence, 1.

Dog bite was reported from Grafton, 7; Lowell, 2; Taunton, 1; total, 10.

Epidemic cerebrospinal meningitis was reported from Boston, 2; Concord, 1; Haverhill, 1; Lawrence, 1; Lynn, 2; New Bedford, 3; Revere, 1; total, 11.

Malaria was reported from Fitchburg, 1; Lynn, 1; total, 2.

Pellagra was reported from Boston, 1.

Septic sore throat was reported from Boston, 5; Clinton, 1; Dedham, 1; Lancaster, 1; New Bedford, 1; Salem, 1; Saugus, 1; total, 11.

Tetanus was reported from Boston, 1; Fall River, 1; North Adams, 1; total, 3.

Trachoma was reported from Boston, 4; Somerville, 1; total, 5.

Trichinosis was reported from Boston, 1; Westfield, 1; total, 2.

Distribution.

All Communicable Diseases.

	April, 1920.	April, 1919.
Total cases (all causes),	10,594	7,633
Case rate per 100,000 population,	262.6	192.3

Certain Prevalent Diseases.

	April, 1920.	April, 1919.	Cities and Towns noticeably exceeding their Median Endemic Indices.[1]		
Diphtheria: —			Brockton,	(4)	8
Total cases,	471	532	Cambridge,	(11)	16
Case rate per 100,000 population,	11.7	13.4	Mansfield,	(1)	9
			Salem,	(4)	19
			Amesbury,	(1)	52
			Arlington,	(1)	25
			Belmont,	(3)	49
			Boston,	(899)	991
			Bridgewater,	(1)	66
			Brookline,	(28)	106
			Chelsea,	(18)	59
			Deerfield,	(0)	36
			Easthampton,	(3)	42
			Everett,	(28)	134
			Falmouth,	(0)	18
			Framingham,	(14)	52
Measles: —			Gloucester,	(1)	27
Total cases,	4,151	1,045	Greenfield,	(1)	45
Case rate per 100,000 population,	102.9	26.3	Haverhill,	(37)	253
			Holyoke,	(5)	118
			Melrose,	(7)	104
			Middleborough,	(1)	81
			Milton,	(4)	34
			Newton,	(62)	256
			Salem,	(5)	28
			Sharon,	(1)	10
			Somerville,	(34)	207
			Stoughton,	(0)	64
			Watertown,	(8)	65
			Whitman,	(1)	44
			Winthrop,	(2)	81
			Wrentham,	(0)	9
			Arlington,	(2)	12
			Attleboro,	(2)	16
			Boston,	(172)	226
			Cambridge,	(20)	56
Scarlet fever: —			Concord,	(0)	17
Total cases,	1,357	715	Gloucester,	(1)	11
Case rate per 100,000 population,	33.6	17.9	Lawrence,	(11)	33
			Lynn,	(24)	68
			New Bedford,	(14)	48
			Newton,	(6)	21
			Quincy,	(7)	27
			Salem,	(5)	17
			Worcester,	(17)	105
Typhoid fever: —					
Total cases,	46	44	Beverly,	(0)	4
Case rate per 100,000 population,	1.1	1.1	New Bedford,	(1)	4
Whooping cough: —					
Total cases,	1,088	379			
Case rate per 100,000 population,	27.0	9.6			
Tuberculosis, pulmonary: —					
Total cases,	730	650			
Case rate per 100,000 population,	18.1	16.4			
Tuberculosis, other forms: —					
Total cases,	91	69			
Case rate per 100,000 population,	2.3	1.7			

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[1] The median endemic index is obtained by arranging in arithmetical sequence the monthly totals of reported cases for the past five years and selecting the middle figure. The numbers in parentheses after the names of each city and town indicate the median endemic index for that city or town; the numbers without parentheses indicate the cases reported during the current month.

CASES AND DEATHS FROM DISEASES DANGEROUS

Line No.	Cities and Towns grouped in Order of Population.	Population estimated as of July 1, 1919.	19A Chicken Pox.		9 Diphtheria.		61A Ep. Cerebrospinal Meningitis.		19B German Measles.		10 Influenza.		92 Lobar Pneumonia.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1	Massachusetts,	3,991,969	722	–	983	75	16	7	30	–	125	16	275	126
2	Cities over 200,000.													
3	Boston,	808,442	177	–	258	15	9	3	7	–	53	6	92	30
4	Cities, 150,000–200,000.													
5	Worcester,	176,761	41	–	41	3	–	–	–	–	5	–	22	9
6	Cities, 100,000–150,000.	*687,463*	*87*	–	*171*	*18*	*1*	*1*	*4*	–	*10*	*1*	*45*	*23*
7	Fall River,	129,416	7	–	30	6	–	–	–	–	–	–	8	5
8	New Bedford,	120,438	5	–	15	3	1	1	–	–	–	–	4	4
9	Springfield,	114,792	27	–	12	1	–	–	4	–	2	1	9	3
10	Cambridge,	112,176	23	–	40	1	–	–	–	–	3	–	11	2
11	Lowell,	109,396	8	–	24	2	–	–	–	–	1	–	7	5
12	Lynn,	101,245	17	–	50	5	–	–	–	–	4	–	6	4
13	Cities, 50,000–100,000.	*478,422*	*59*	–	*89*	*8*	–	–	*4*	–	*14*	*3*	*29*	*12*
14	Somerville,	94,950	13	–	18	2	–	–	–	–	2	–	6	1
15	Lawrence,	93,933	33	–	9	1	–	–	1	–	1	–	7	5
16	Brockton,	66,824	6	–	32	2	–	–	2	–	–	–	1	1
17	Holyoke,	63,413	–	–	2	1	–	–	1	–	–	1	1	3
18	Haverhill,	53,940	1	–	10	–	–	–	–	–	8	–	5	–
19	Malden,	52,669	5	–	7	1	–	–	–	–	–	1	3	1
20	Chelsea,	52,663	1	–	11	1	–	–	–	–	3	1	6	1
21	Cities and Towns, 25,000–50,000.	*500,608*	*112*	–	*171*	*15*	–	–	*3*	–	*5*	–	*27*	*16*
22	Quincy,	47,433	3	–	11	1	–	–	–	–	–	–	2	2
23	Pittsfield,	45,907	14	–	1	–	–	–	–	–	–	–	2	1
24	Newton,	45,895	19	–	19	3	–	–	2	–	2	–	2	1
25	Salem,	42,292	4	–	26	4	–	–	–	–	–	–	2	–
26	Everett,	41,282	6	–	61	6	–	–	–	–	1	–	2	1
27	Fitchburg,	41,196	2	–	3	–	–	–	–	–	–	–	3	–
28	Brookline,	38,287	54	–	8	–	–	–	1	–	1	–	5	2
29	Taunton,	37,761	–	–	3	–	–	–	–	–	–	–	3	1
30	Medford,	36,702	1	–	9	–	–	–	–	–	–	–	2	3
31	Chicopee,	34,124	2	–	5	1	–	–	–	–	–	–	2	3
32	Waltham,	32,107	6	–	9	–	–	–	–	–	–	–	1	1
33	Revere,	31,035	–	–	15	–	–	–	–	–	–	–	–	–
34	Beverly,	26,587	1	–	1	–	–	–	–	–	1	–	1	1
35	Cities and Towns, 10,000–25,000.	*597,915*	*151*	–	*146*	*5*	*4*	*2*	*6*	–	*22*	*1*	*36*	*19*
36	Gloucester,	24,545	1	–	19	–	–	–	–	–	–	–	1	–
37	Northampton,	23,526	1	–	–	–	–	–	–	–	–	–	3	–
38	North Adams,	22,048	11	–	–	–	–	–	–	–	5	–	1	1
39	Peabody,	21,070	–	–	1	–	–	–	–	–	–	–	–	–
40	Westfield,	20,402	2	–	24	1	–	–	–	–	–	–	3	2
41	Attleboro,	20,386	3	–	23	–	–	–	–	–	–	–	1	–
42	Watertown,	19,579	6	–	4	–	–	–	–	–	–	–	3	–
43	Framingham,	18,310	1	–	2	–	1	–	–	–	–	–	2	–
44	Arlington,	18,004	2	–	4	–	1	1	–	–	–	–	1	–
45	Melrose,	17,860	1	–	–	–	–	–	–	–	–	–	–	–
46	Gardner,	17,786	1	–	1	–	1	–	–	–	–	–	1	1
47	Leominster,	17,701	5	–	1	1	1	1	–	–	–	–	4	3
48	Woburn,	17,336	–	–	1	–	–	–	–	–	4	–	3	2
49	Methuen,	16,161	2	–	8	–	–	–	–	–	–	–	–	–
50	Marlborough,	15,814	14	–	–	–	–	–	–	–	–	–	1	–
51	Newburyport,	15,614	6	–	2	–	–	–	–	–	–	–	1	–

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[1] Deaths are available for publication each month through the courtesy of the Secretary of the Com correction, these deaths, while approximately correct, are not absolutely complete.

TO THE PUBLIC HEALTH,[1] NOVEMBER, 1919.

6 Measles.		19C Mumps.		38A Ophthalmia Neonatorum.		38B Suppurative Conjunctivitis.		7 Scarlet Fever.		28-29 Tuberculosis, Pulmonary.		30-35 Tuberculosis, Other Forms.		1 Typhoid Fever.		38C Gonorrhea.		37 Syphilis.		8 Whooping Cough.		
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Line No.
1,059	14	498	–	92	–	22	–	1054	13	457	274	55	48	81	11	656	–	305	30	670	21	1
																						2
517	6	196	–	19	–	9	–	220	–	139	67	17	15	6	1	261	–	132	10	137	5	3
																						4
–	–	3	–	9	–	2	–	44	–	23	10	4	3	8	4	32	–	37	5	6	–	5
229	*7*	*51*	–	*33*	–	*5*	–	*222*	*3*	*76*	*46*	*14*	*10*	*24*	*2*	*110*	–	*46*	*2*	*123*	*6*	6
39	3	–	–	15	–	3	–	5	1	12	8	4	3	14	–	16	–	4	–	13	1	7
163	4	–	–	11	–	2	–	20	1	15	10	2	3	2	–	19	–	11	2	6	3	8
3	–	1	–	1	–	–	–	29	–	7	4	2	1	2	1	28	–	17	–	38	–	9
21	–	35	–	1	–	–	–	24	–	13	12	3	2	3	–	20	–	5	–	51	1	10
1	–	14	–	4	–	–	–	58	1	13	4	1	1	–	–	12	–	5	–	1	1	11
2	–	1	–	1	–	–	–	86	–	16	8	2	–	3	1	15	–	4	–	14	–	12
80	–	*52*	–	*13*	–	*4*	–	*108*	*4*	*49*	*34*	*4*	*3*	*12*	*2*	*61*	–	*29*	–	*19*	*1*	13
4	–	4	–	2	–	1	–	16	1	8	10	1	–	2	–	5	–	3	–	4	–	14
9	–	5	–	1	–	–	–	35	2	8	3	1	–	4	–	13	–	14	–	2	–	15
64	–	–	–	2	–	3	–	13	–	10	5	–	–	–	–	6	–	8	–	11	–	16
–	–	–	–	–	–	–	–	21	–	10	3	–	–	1	–	4	–	1	–	–	1	17
–	–	1	–	4	–	–	–	5	–	6	5	2	2	1	–	17	–	3	–	–	–	18
–	–	16	–	1	–	–	–	8	1	5	6	–	1	3	1	7	–	–	–	–	–	19
3	–	26	–	3	–	–	–	10	–	2	2	–	–	1	1	9	–	–	–	2	–	20
31	*1*	*63*	–	*7*	–	–	–	*113*	*2*	*52*	*28*	*6*	*4*	*7*	–	*68*	–	*20*	*5*	*76*	*2*	21
–	–	1	–	–	–	–	–	15	–	4	4	1	–	–	–	4	–	1	–	4	–	22
–	–	1	–	–	–	–	–	3	–	9	3	–	1	–	–	4	–	1	–	3	–	23
1	–	2	–	1	–	–	–	20	–	4	–	1	1	1	–	5	–	–	–	20	–	24
1	–	2	–	2	–	–	–	9	1	4	7	1	1	–	–	5	–	3	1	4	1	25
–	–	18	–	1	–	–	–	5	–	10	–	1	–	1	–	2	–	1	–	18	–	26
2	–	1	–	–	–	–	–	10	–	1	2	1	–	–	–	2	–	4	–	1	1	27
3	–	33	–	–	–	–	–	8	–	3	3	–	–	2	–	5	–	–	–	16	–	28
2	1	–	–	–	–	–	–	2	–	5	4	1	1	–	–	30	–	5	4	6	–	29
5	–	2	–	2	–	–	–	8	–	5	3	–	–	2	–	–	–	2	–	3	–	30
14	–	–	–	–	–	–	–	9	–	5	1	–	–	–	–	2	–	–	–	1	–	31
2	–	–	–	1	–	–	–	8	1	1	–	–	–	1	–	3	–	2	–	–	–	32
–	–	–	–	–	–	–	–	12	–	–	1	–	–	–	–	6	–	1	–	–	–	33
1	–	3	–	–	–	–	–	4	–	1	–	–	–	–	–	–	–	–	–	–	–	34
85	–	*87*	–	*9*	–	–	–	*191*	*3*	*58*	*35*	*8*	*8*	*11*	*1*	*77*	–	*26*	*3*	*144*	*4*	35
–	–	1	–	–	–	–	–	28	–	3	2	–	–	–	–	2	–	–	2	6	–	36
–	–	1	–	–	–	–	–	7	1	4	3	1	1	–	–	4	–	–	1	1	–	37
–	–	1	–	1	–	–	–	3	–	1	1	1	1	1	–	4	–	–	–	14	–	38
–	–	–	–	–	–	–	–	8	–	1	1	–	–	–	–	2	–	1	–	–	–	39
–	–	1	–	–	–	–	–	–	–	3	4	–	–	–	–	1	–	1	–	–	–	40
1	–	1	–	–	–	–	–	7	–	2	3	1	1	2	–	1	–	–	–	–	–	41
1	–	13	–	–	–	–	–	5	–	4	3	1	–	–	–	1	–	–	–	13	–	42
–	–	–	–	–	–	–	–	16	–	2	–	–	–	2	–	30	–	6	–	6	–	43
–	–	14	–	–	–	–	–	3	–	3	1	–	1	–	–	–	–	–	–	4	–	44
–	–	–	–	2	–	–	–	5	–	–	1	–	–	–	–	–	–	–	–	7	–	45
–	–	3	–	–	–	–	–	1	–	5	–	1	1	–	–	4	–	1	–	–	–	46
–	–	6	–	1	–	–	–	16	–	2	–	–	1	–	–	3	–	–	–	2	–	47
–	–	7	–	–	–	–	–	1	–	2	2	1	–	1	–	2	–	1	–	–	–	48
–	–	2	–	–	–	–	–	6	–	5	2	–	1	–	–	1	–	–	–	–	–	49
–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	2	–	–	–	13	–	50
–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	1	–	–	–	4	–	51

monwealth. Owing to the delay by physicians in returning death certificates sent them for addition and

CASES AND DEATHS FROM DISEASES DANGEROUS

Line No.	CITIES AND TOWNS GROUPED IN ORDER OF POPULATION.	Population estimated as of July 1, 1919.	19A Chicken Pox.		9 Diphtheria.		61A Ep. Cerebrospinal Meningitis.		19B German Measles.		10 Influenza.		92 Lobar Pneumonia.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
52	Southbridge,	15,580	–	–	–	–	–	–	–	–	–	–	–	–
53	Winthrop,	14,968	46	–	1	–	–	–	1	–	1	–	–	–
54	Weymouth,	14,874	–	–	2	–	–	–	–	–	–	–	–	1
55	Greenfield,	14,466	2	–	10	–	–	–	–	–	1	–	–	–
56	Milford,	14,214	5	–	2	–	–	–	1	–	–	–	–	–
57	Wakefield,	13,939	–	–	3	–	–	–	–	–	1	–	2	2
58	Plymouth,	13,587	1	–	1	–	–	–	–	–	–	–	–	–
59	Norwood,	13,472	–	–	3	–	–	–	3	–	–	–	1	–
60	Webster,	13,453	–	–	1	–	–	–	–	–	3	–	–	–
61	Adams,	13,378	4	–	5	2	–	–	–	–	–	–	–	–
62	Clinton,	13,289	–	–	3	1	–	–	–	–	–	–	3	–
63	West Springfield,	13,119	6	–	2	–	–	–	–	–	–	–	2	–
64	Danvers,	12,663	1	–	–	–	–	–	–	–	–	–	–	4
65	Dedham,	12,524	2	–	4	–	–	–	–	–	–	–	–	–
66	Natick,	12,175	14	–	–	–	–	–	–	–	–	–	–	–
67	Saugus,	12,061	4	–	4	–	–	–	–	–	5	1	–	1
68	Easthampton,	10,956	1	–	6	–	–	–	–	–	–	–	2	1
69	Athol,	10,831	1	–	1	–	–	–	–	–	–	–	–	–
70	Bridgewater,	10,807	–	–	4	–	–	–	1	–	–	–	–	1
71	Winchester,	10,590	8	–	1	–	–	–	–	–	1	–	–	–
72	Braintree,	10,417	–	–	–	–	–	–	–	–	–	–	1	–
73	Belmont,	10,219	–	–	–	–	–	–	–	–	–	–	–	–
74	Palmer,	10,191	–	–	3	–	–	–	–	–	1	–	–	–
75	TOWNS, 5,000-10,000.	*342,000*	*59*	–	*58*	*5*	–	–	*6*	–	*7*	*3*	*13*	*6*
76	TOWNS, 2,500-5,000.	*188,565*	*19*	–	*28*	*2*	*1*	*1*	–	–	*7*	*2*	*5*	*8*
77	TOWNS UNDER 2,500.	*211,793*	*10*	–	*20*	*4*	*1*	–	–	–	*2*	–	*6*	*3*
78	STATE INFIRMARY,	–	*7*	–	*1*	–	–	–	–	–	–	–	–	–
79	CAMP DEVENS,	–	–	–	–	–	–	–	–	–	–	–	–	–

In addition to the above there occurred 5 cases of anterior-poliomyelitis, 1 in Great Barrington, 1 in
2 cases of anthrax, 1 in Hudson and 1 in Somerville; 8 cases of dogbite, 7 in Fall River and 1 in Lunen
Newton, 1 in Weymouth and 1 in Winthrop; 12 cases of septic sore throat, 1 in Arlington, 3 in Boston, 1 in
5 deaths, 2 in Boston, 1 in Newbury, 1 in Salem and 1 in Springfield; 2 cases of smallpox in Gardner; 2
and 8 cases of trachoma, 4 in Boston, 1 in Chelsea, 1 in Lowell, 1 in Northampton and 1 in Somerville.

TO THE PUBLIC HEALTH — Concluded.

6 Measles.		19C Mumps.		38A Ophthalmia Neonatorum.		38B Suppurative Conjunctivitis.		7 Scarlet Fever.		28-29 Tuberculosis, Pulmonary.		30-35 Tuberculosis, Other Forms.		1 Typhoid Fever.		38C Gonorrhea.		37 Syphilis.		8 Whooping Cough.		
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Line No.
1	-	-	-	-	-	-	-	-	-	2	1	-	-	1	-	2	-	1	-	-	-	52
3	-	4	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-	-	-	12	-	53
-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	1	-	-	-	-	-	54
1	-	13	-	3	-	-	-	4	-	1	-	-	-	1	-	1	-	3	-	34	1	55
-	-	-	-	-	-	-	-	6	-	-	-	1	1	-	-	-	-	-	-	-	-	56
-	-	-	-	-	-	-	-	4	-	1	1	-	-	-	-	-	-	-	-	5	1	57
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	58
-	-	-	-	-	-	-	-	8	-	1	-	-	-	-	-	2	-	2	-	-	-	59
2	-	-	-	2	-	-	-	-	-	1	1	-	-	1	-	1	-	1	-	-	-	60
-	-	-	-	-	-	-	-	-	-	4	1	-	-	-	-	-	-	-	-	9	-	61
-	-	1	-	-	-	-	-	-	-	1	1	-	-	-	-	2	-	1	-	1	1	62
-	-	1	-	-	-	-	-	11	-	1	-	-	-	-	-	2	-	-	-	-	-	63
52	-	-	-	-	-	-	-	2	-	-	2	-	-	-	-	2	-	5	-	-	-	64
24	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	-	6	-	65
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66
-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	67
-	-	-	-	-	-	-	-	15	2	-	-	-	-	-	-	1	-	-	-	1	1	68
-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-	1	-	1	-	-	-	69
-	-	2	-	-	-	-	-	12	-	3	-	-	-	-	-	2	-	-	-	-	-	70
-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	1	-	-	-	3	-	71
-	-	-	-	-	-	-	-	10	-	-	1	-	-	-	-	-	-	-	-	2	-	72
-	-	15	-	-	-	-	-	-	-	1	1	-	-	1	-	-	-	1	-	-	-	73
-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	74
19	-	*29*	-	*1*	-	-	-	*62*	-	*21*	*12*	*1*	*2*	*6*	*1*	*27*	-	*9*	*1*	*65*	*3*	75
7	-	*9*	-	*1*	-	*1*	-	*46*	*1*	*12*	*7*	-	*3*	*1*	-	*3*	-	*5*	*1*	*16*	-	76
91	-	*8*	-	-	-	-	-	*43*	-	*5*	*22*	-	-	*6*	-	*9*	-	-	*1*	*78*	-	77
-	-	-	-	-	-	-	-	*5*	-	*22*	*13*	*1*	-	-	-	*2*	-	-	*2*	*6*	-	78
-	-	-	-	-	-	-	-	-	-	-	*1*	-	-	-	-	*6*	-	*1*	-	-	-	79

Lynn, 1 in Medford, 1 in Newton, and 1 in Somerville, with 2 deaths, 1 in New Bedford and 1 in Needham; burg; 2 cases of dysentery in Wesport; 1 case of leprosy in Boston; 4 cases of malaria, 1 in Dedham, 1 in Brockton, 1 in Cambridge, 3 in Dartmouth, 1 in Newburyport, 1 in Waltham and 1 in Westford, with cases of tetanus, 1 in Fairhaven and 1 in Somerville, with 2 deaths, 1 in Georgetown and 1 in Milton;

CASES AND DEATHS FROM DISEASES DANGEROUS

Line No.	Cities and Towns grouped in Order of Population.	Population estimated as of July 1, 1919.	19A		9		61A		19B		10		92	
			Chicken Pox.		Diphtheria.		Ep. Cerebrospinal Meningitis.		German Measles.		Influenza.		Lobar Pneumonia.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1	Massachusetts,	3,991,969	1055	**1**	1018	**91**	18	**12**	52	**1**	148	**22**	441	**209**
2	Cities over 200,000.													
3	Boston,	808,442	227	–	221	**23**	1	**3**	13	–	32	**1**	120	**48**
4	Cities, 150,000–200,000.													
5	Worcester,	176,761	80	–	32	**1**	–	**1**	–	–	10	**2**	36	**19**
6	Cities, 100,000–150,000.	*687,463*	*210*	–	*233*	*24*	*4*	*1*	*11*	–	*29*	*5*	*91*	*28*
7	Fall River,	129,416	19	–	45	**4**	–	–	1	–	4	**1**	15	**3**
8	New Bedford,	120,438	8	–	22	**5**	1	–	5	–	2	**2**	8	**6**
9	Springfield,	114,796	47	–	22	**2**	1	**1**	2	–	1	–	20	**4**
10	Cambridge,	112,176	111	–	60	**2**	1	–	2	–	16	–	29	**5**
11	Lowell,	109,396	3	–	23	**2**	–	–	–	–	3	**2**	10	**5**
12	Lynn,	101,245	22	–	61	**9**	1	–	1	–	3	–	9	**5**
13	Cities, 50,000–100,000.	*478,422*	*76*	–	*108*	*13*	*3*	*1*	*6*	–	*15*	*3*	*51*	*26*
14	Somerville,	94,950	24	–	7	**2**	–	–	1	–	7	–	15	**8**
15	Lawrence,	93,933	17	–	17	**5**	1	–	2	–	–	**2**	8	**3**
16	Brockton,	66,824	4	–	21	**1**	–	–	–	–	2	–	7	**2**
17	Holyoke,	63,413	3	–	5	**1**	–	–	2	–	–	–	4	**3**
18	Haverhill,	53,940	11	–	19	**2**	1	**1**	1	–	3	**1**	6	**1**
19	Malden,	52,669	11	–	17	**1**	–	–	–	–	–	–	5	**5**
20	Chelsea,	52,663	6	–	22	**1**	1	–	–	–	3	–	6	**4**
21	Cities and Towns, 25,000–50,000.	*500,608*	*162*	–	*190*	*12*	*2*	–	*6*	–	*14*	*3*	*51*	*24*
22	Quincy,	47,433	3	–	14	–	–	–	–	–	5	–	6	**3**
23	Pittsfield,	45,907	20	–	1	**1**	–	–	–	–	–	–	3	–
24	Newton,	45,895	34	–	6	**1**	–	–	2	–	4	–	3	**1**
25	Salem,	42,292	24	–	57	**2**	1	–	–	–	1	–	4	**2**
26	Everett,	41,282	9	–	60	**3**	–	–	–	–	–	–	3	**1**
27	Fitchburg,	41,196	4	–	8	**1**	1	–	1	–	–	–	7	**1**
28	Brookline,	38,287	42	–	7	–	–	–	–	–	3	–	6	**1**
29	Taunton,	37,761	–	–	6	–	–	–	–	–	–	–	3	**4**
30	Medford,	36,702	7	–	13	**1**	–	–	1	–	1	–	7	**3**
31	Chicopee,	34,124	4	–	5	**1**	–	–	1	–	–	**2**	1	**4**
32	Waltham,	32,107	9	–	2	**1**	–	–	–	–	–	–	6	**2**
33	Revere,	31,105	–	–	11	**1**	–	–	–	–	–	**1**	–	**1**
34	Beverly,	26,587	6	–	–	–	–	–	1	–	–	–	2	**1**
35	Cities and Towns, 10,000–25,000.	*597,915*	*168*	*1*	*121*	*8*	*5*	*3*	*7*	–	*25*	*5*	*49*	*24*
36	Gloucester,	24,545	–	–	–	–	–	–	–	–	–	–	1	**2**
37	Northampton,	23,526	4	–	2	–	–	–	2	–	–	–	4	**1**
38	North Adams,	22,048	10	–	–	–	–	–	–	–	–	–	–	–
39	Peabody,	21,070	4	–	3	–	–	–	–	–	–	–	2	**3**
40	Westfield,	20,402	9	–	28	**1**	1	**1**	–	–	–	–	7	**2**
41	Attleboro,	20,386	4	–	16	–	–	–	1	–	1	–	–	–
42	Watertown,	19,579	14	–	7	–	1	**1**	–	–	–	–	–	–
43	Framingham,	18,310	6	–	–	–	1	–	–	–	–	**1**	2	–
44	Arlington,	18,004	5	–	6	–	–	–	–	–	–	–	1	**1**
45	Melrose,	17,860	2	–	–	–	–	–	2	–	–	**1**	–	–
46	Gardner,	17,786	–	–	–	–	–	–	–	–	–	–	–	**2**
47	Leominster,	17,701	14	–	–	–	–	–	–	–	2	**1**	2	–
48	Woburn,	17,336	3	–	1	–	1	–	–	–	–	–	–	**1**
49	Methuen,	16,161	1	–	7	**1**	–	–	–	–	–	–	2	–
50	Marlborough,	15,814	14	–	–	–	–	–	–	–	–	–	1	–
51	Newburyport,	15,614	2	–	–	–	–	–	–	–	–	–	2	–

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[1] Deaths are available for publication each month through the courtesy of the Secretary of the Com and correction, these deaths, while approximately correct, are not absolutely complete.

TO THE PUBLIC HEALTH,[1] DECEMBER, 1919.

6 Measles.		19C Mumps.		38A Ophthalmia Neonatorum.		38B Suppurative Conjunctivitis.		7 Scarlet Fever.		28-29 Tuberculosis, Pulmonary.		30-35 Tuberculosis, Other Forms.		1 Typhoid Fever.		38C Gonorrhea.		37 Syphilis.		8 Whooping Cough.		
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Line No.
2,603	34	844	–	122	–	43	–	1392	23	485	298	67	43	53	6	706	–	434	32	926	39	1
																						2
875	13	254	–	38	–	13	–	304	4	172	78	19	7	2	–	294	–	148	10	240	12	3
																						4
3	–	48	–	10	–	5	–	53	1	24	18	4	3	3	–	26	–	19	5	–	–	5
430	*12*	*159*	–	*38*	–	*15*	–	*274*	*5*	*82*	*44*	*15*	*5*	*11*	*1*	*116*	–	*61*	*6*	*191*	*9*	6
31	–	2	–	7	–	6	–	9	–	17	10	4	1	5	–	15	–	3	–	12	1	7
309	9	4	–	17	–	2	–	23	–	24	5	6	1	3	–	11	–	9	2	9	3	8
7	1	9	–	3	–	3	–	33	1	8	3	3	1	1	–	37	–	29	2	40	1	9
74	1	136	–	4	–	3	–	35	–	11	11	1	–	1	–	13	–	5	–	115	4	10
5	1	6	–	6	–	1	–	64	3	12	8	–	1	1	1	28	–	12	–	8	–	11
4	–	2	–	1	–	–	–	110	1	10	7	1	1	–	–	12	–	3	2	7	–	12
460	*6*	*45*	–	*21*	–	*5*	–	*135*	*1*	*50*	*30*	*10*	*12*	*8*	*1*	*61*	–	*39*	–	*43*	*5*	13
40	1	3	–	1	–	–	–	17	–	8	1	2	2	–	–	7	–	5	–	14	–	14
10	–	9	–	2	–	–	–	48	–	11	9	1	3	5	1	14	–	13	–	16	2	15
314	1	3	–	1	–	–	–	16	–	5	3	3	4	2	–	3	–	4	–	4	–	16
80	3	1	–	4	–	–	–	23	1	6	4	–	–	–	–	1	–	4	–	3	2	17
5	1	1	–	2	–	1	–	2	–	10	3	4	2	1	–	25	–	10	–	2	–	18
6	–	21	–	4	–	–	–	17	–	6	5	–	–	–	–	4	–	–	–	2	1	19
5	–	7	–	7	–	4	–	12	–	4	5	–	1	–	–	7	–	3	–	2	–	20
120	*1*	*170*	–	*5*	–	*4*	–	*181*	*1*	*52*	*29*	*5*	*5*	*5*	*2*	*35*	–	*34*	*2*	*93*	*3*	21
9	–	5	–	–	–	–	–	32	–	6	1	1	2	1	1	2	–	2	–	8	1	22
1	–	2	–	–	–	1	–	4	–	6	4	1	–	–	–	8	–	1	–	1	–	23
4	–	2	–	–	–	1	–	47	–	3	–	1	2	–	–	3	–	–	–	16	–	24
29	–	8	–	1	–	–	–	29	1	3	4	–	–	–	–	5	–	3	1	7	–	25
–	–	35	–	1	–	–	–	6	–	2	2	1	–	1	–	1	–	1	–	16	1	26
2	–	1	–	–	–	–	–	4	–	1	4	–	–	1	–	7	–	9	–	–	–	27
9	–	77	–	–	–	–	–	10	–	9	2	–	1	–	–	1	–	2	–	20	–	28
2	1	2	–	–	–	–	–	1	–	5	4	1	–	–	–	4	–	12	1	9	–	29
17	–	13	–	–	–	–	–	10	–	2	1	–	–	–	–	–	–	–	–	15	–	30
27	–	–	–	1	–	–	–	14	–	4	2	–	–	–	–	–	–	–	–	1	1	31
6	–	1	–	2	–	1	–	8	–	6	2	–	–	–	1	1	–	–	–	–	–	32
–	–	–	–	–	–	1	–	9	–	3	–	–	–	–	–	3	–	4	–	–	–	33
14	–	24	–	–	–	–	–	7	–	2	3	–	–	2	–	–	–	–	–	–	–	34
250	*1*	*102*	–	*7*	–	–	–	*219*	*6*	*56*	*37*	*6*	*5*	*14*	*2*	*47*	–	*17*	*1*	*189*	*7*	35
–	–	2	–	–	–	–	–	23	3	2	1	–	–	1	–	1	–	–	–	29	1	36
1	–	12	–	–	–	–	–	3	1	2	2	–	3	2	–	3	–	–	–	10	–	37
–	–	7	–	–	–	–	–	1	–	1	–	–	–	–	–	1	–	–	–	4	1	38
1	–	1	–	–	–	–	–	7	–	1	–	–	–	–	–	3	–	–	–	–	–	39
–	–	1	–	–	–	–	–	4	–	2	7	–	–	–	–	4	–	2	–	–	–	40
2	–	–	–	–	–	–	–	24	1	–	1	–	–	–	1	1	–	2	–	–	–	41
28	–	22	–	–	–	–	–	4	–	2	–	–	–	–	–	1	–	–	–	1	–	42
3	–	1	–	–	–	–	–	14	–	3	–	1	–	–	–	–	–	1	–	4	–	43
3	–	18	–	–	–	–	–	6	–	1	1	–	–	–	–	3	–	–	–	8	–	44
2	–	–	–	3	–	–	–	7	–	3	–	–	–	1	–	–	–	–	–	14	–	45
–	–	1	–	–	–	–	–	4	–	1	1	–	–	–	–	1	–	–	–	–	–	46
–	–	1	–	–	–	–	–	12	–	5	1	2	–	2	–	2	–	–	–	5	2	47
1	–	11	–	–	–	–	–	3	–	4	2	1	–	1	–	–	–	1	–	–	–	48
1	–	–	–	–	–	–	–	8	–	3	1	–	–	1	–	–	–	–	–	–	–	49
2	–	–	–	–	–	–	–	–	–	3	1	–	–	1	1	1	–	–	–	5	–	50
–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	13	1	51

monwealth. Owing to the delay by physicians in returning death certificates sent them for addition

Cases and Deaths from Diseases Dangerous

Line No.	Cities and Towns grouped in Order of Population.	Population estimated as of July 1, 1919.	19A Chicken Pox.		9 Diphtheria.		61A Ep. Cerebrospinal Meningitis		19B German Measles.		10 Influenza.		92 Lobar Pneumonia.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
52	Southbridge,	15,580	-	-	-	-	-	-	-	-	1	1	1	-
53	Winthrop,	14,968	23	-	-	-	-	-	-	-	2	-	1	-
54	Weymouth,	14,874	-	-	-	1	-	-	-	-	-	-	-	1
55	Greenfield,	14,466	1	-	2	1	-	-	2	-	1	-	1	1
56	Milford,	14,214	-	-	12	-	-	-	-	-	-	-	-	-
57	Wakefield,	13,939	-	-	-	-	1	1	-	-	-	-	1	-
58	Plymouth,	13,587	-	-	-	-	-	-	-	-	3	-	-	-
59	Norwood,	13,472	1	-	-	-	-	-	-	-	-	-	5	2
60	Webster,	13,453	6	-	4	1	-	-	-	-	-	-	-	-
61	Adams,	13,378	1	-	1	-	-	-	-	-	-	-	1	-
62	Clinton,	13,289	5	1	1	-	-	-	-	-	-	-	2	1
63	West Springfield,	13,119	1	-	2	-	-	-	-	-	1	-	-	-
64	Danvers,	12,663	4	-	2	-	-	-	-	-	-	-	1	3
65	Dedham,	12,524	5	-	8	-	-	-	-	-	-	-	-	-
66	Natick,	12,174	6	-	3	-	-	-	-	-	-	-	1	1
67	Saugus,	12,061	7	-	-	-	-	-	-	-	4	-	1	-
68	Easthampton,	10,956	-	-	2	-	-	-	-	-	-	-	1	-
69	Athol,	10,831	-	-	-	-	-	-	-	-	-	-	4	-
70	Bridgewater,	10,807	-	-	2	-	-	-	-	-	-	-	-	-
71	Winchester,	10,590	11	-	1	-	-	-	-	-	-	-	-	-
72	Braintree,	10,417	4	-	3	-	-	-	-	-	10	-	1	2
73	Belmont,	10,219	1	-	1	-	-	-	-	-	-	-	3	1
74	Palmer,	10,191	-	-	7	3	-	-	-	-	-	1	1	-
75	Towns, 5,000–10,000.	*342,000*	*67*	-	*50*	*2*	*2*	-	*7*	*1*	*14*	*1*	*26*	*10*
76	Towns, 2,500–5,000.	*188,565*	*35*	-	*47*	*6*	-	-	*1*	-	*7*	*1*	*6*	*12*
77	Towns under 2,500.	*211,793*	*30*	-	*16*	*2*	*1*	*2*	*1*	-	*2*	*1*	*8*	*18*
78	State Infirmary,	-	-	-	-	-	-	*1*	-	-	-	-	*3*	-
79	Camp Devens,	-	-	-	-	-	-	-	-	-	-	-	-	-

In addition to the above there occurred 1 case of actinomycosis in Boston; 3 cases of anterior polio
1 in Worcester; 6 cases of dog bite, 1 in Fall River, 1 in Fitchburg and 4 in Templeton; 4 cases of malaria,
cases of septic sore throat, 7 in Boston, 2 in Brockton, 1 in Brookline, 1 in Everett, 2 in Lowell, 2 in New
with 3 deaths, 1 in Easton, 1 in Everett and 1 in Lynn; 2 cases of smallpox in Fall River, with 2 deaths:

TO THE PUBLIC HEALTH — Concluded.

6 Measles.		19C Mumps.		38A Ophthalmia Neonatorum.		38B Suppurative Conjunctivitis.		7 Scarlet Fever.		28-29 Tuberculosis, Pulmonary.		30-35 Tuberculosis, Other Forms.		1 Typhoid Fever.		38C Gonorrhea.		37 Syphilis.		8 Whooping Cough.		
Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Line No.
12	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	–	–	–	52
1	–	6	–	1	–	–	–	12	–	1	1	–	–	–	–	1	–	–	–	18	–	53
1	–	–	–	–	–	–	–	6	–	2	1	–	–	–	–	1	–	–	–	1	–	54
–	–	3	–	2	–	–	–	2	–	–	1	–	–	1	–	3	–	3	–	39	1	55
3	–	1	–	–	–	–	–	4	–	1	1	–	–	–	–	–	–	–	–	–	–	56
–	–	–	–	–	–	–	–	5	–	2	–	–	–	–	–	–	–	–	–	5	–	57
–	–	–	–	–	–	–	–	1	–	1	–	–	–	3	–	2	–	1	–	–	–	58
1	–	–	–	–	–	–	–	11	–	1	1	–	1	–	–	1	–	1	–	3	–	59
4	–	–	–	–	–	–	–	–	–	1	1	1	1	1	–	2	–	–	–	2	–	60
–	–	–	–	–	–	–	–	–	–	1	2	–	–	–	–	4	–	–	–	3	–	61
–	–	–	–	–	–	–	–	5	–	3	2	1	–	–	–	1	–	1	–	–	1	62
–	–	–	–	–	–	–	–	4	–	1	–	–	–	–	–	1	–	–	–	–	–	63
55	–	–	–	–	–	–	–	9	–	–	2	–	–	–	–	–	–	–	1	–	–	64
124	1	1	–	–	–	–	–	6	–	–	–	–	–	–	–	3	–	–	–	21	–	65
–	–	–	–	–	–	–	–	2	–	1	–	–	–	–	–	1	–	–	–	–	–	66
–	–	–	–	–	–	–	–	3	–	2	–	–	–	–	–	1	–	1	–	1	–	67
1	–	–	–	–	–	–	–	12	1	1	–	–	–	–	–	–	–	–	–	–	–	68
–	–	–	–	–	–	–	–	5	–	–	1	–	–	–	–	1	–	–	–	–	–	69
3	–	–	–	–	–	–	–	5	–	1	1	–	–	–	–	1	–	–	–	–	–	70
–	–	3	–	1	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	1	–	71
–	–	–	–	–	–	–	–	4	–	2	4	–	–	–	–	–	–	–	–	2	–	72
1	–	10	–	–	–	–	–	2	–	1	–	–	–	–	–	–	–	–	–	–	–	73
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	3	–	–	–	74
282	–	*47*	–	*2*	–	*1*	–	*123*	*2*	*26*	*15*	*5*	*4*	*6*	–	*42*	–	*12*	*1*	*68*	*1*	75
34	–	*7*	–	–	–	–	–	*53*	–	*9*	*10*	*1*	*1*	–	–	*67*	–	*98*	–	*26*	*1*	76
148	*1*	*10*	–	*1*	–	–	–	*45*	*3*	*11*	*29*	*1*	–	*4*	–	*12*	–	*2*	*1*	*76*	*1*	77
1	–	*2*	–	–	–	–	–	*5*	–	*3*	*8*	*1*	*1*	–	–	*2*	–	*2*	*6*	–	–	78
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	*4*	–	*2*	–	–	–	79

myelitis, 1 in Lowell, 1 in Needham and 1 in Winthrop; 3 cases of anthrax, 1 in Canton, 1 in Hudson and 1 in Boston, 1 in Brockton, 1 in Malden and 1 in Northampton; 1 death from pellagra in Danvers; 21 buryport, 1 in Newton, 1 in Quincy, 1 in Somerville, 1 in Springfield, 1 in Westford and 1 in Worcester, and 8 cases of trachoma, 1 in Attleboro, 6 in Boston and 1 in Worcester.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

Commissioner of Public Health, Eugene R. Kelley, M.D.

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[1] Acting.

THE COMMONHEALTH

Vol. 7, No. 3 May-June, 1920

BI-MONTHLY BULLETIN

MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

EUGENE R. KELLEY, M.D., Commissioner

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CHILD WELFARE.

By Hazel Wedgwood, Health Instructor, Massachusetts Department of Public Health, Division of Hygiene.

I. CHILD welfare is such a broad subject that almost any activity which affects the citizens of a country, has its effects either for good or ill upon child life. However, for the purposes of this article child welfare activities will be limited to a discussion of work which is directly maintained for the purpose of protecting and conserving the health of children. This work includes (1) prenatal care, (2) obstetrical care, (3) infant care covering the nursing period, (4) children of pre-school age, (5) the school child, and (6) the child in industry. The last two, the school child and the child in industry, will be discussed in separate lectures.

II. (*a*) The first definite and comprehensive child welfare movement was started in France in 1892, when the French people recognized that, because of a declining birth rate, intelligent measures for the protection and conservation of child life must be adopted if the nation were to survive. Prior to this time palliative measures for the better care of children had been adopted, among which were day nurseries and infant and maternity hospitals. The wisdom of caring for children in day nurseries while mothers go out to work has been questioned for many years. These earlier measures were ineffective because they dealt with results and not with the causes of infant mortality.

The pioneer in the first constructive child welfare movement was Dr. Pierre Budin, who at this time (1892) was chief of the obstetrical service in the Charité Hospital in Paris. The need for a definite child welfare movement was forced upon Dr. Budin by the frequency with which mothers, who returned to the hospital for their second pregnancy, reported that their first baby had died, and also through the number of women returning after two weeks with a very sick baby, even though in both cases the mother and baby had originally been discharged from the hospital perfectly well. Dr. Budin's first step in this child welfare movement was the establishment, in connection with his clinic work, of "consultations for nurslings." These "consultations" were almost identical in purpose with our well-baby clinics of to-day, inasmuch as their main object was the education of the mother in caring for her baby. Breast feeding was especially emphasized at these "consultations," but when it was found necessary to give babies artificial feeding, mothers were taught how to prepare cow's milk, and in this connection there was later (1894) established the so called milk stations. Dr. Budin's "consultations for nurslings" demonstrated that infant mortality can be definitely lowered through the education of mothers. Of 716 babies under his supervision during their first year of life, only 26 died, and of these 26 only one died of gastrointestinal disease, which disease was at that time the most prolific cause of deaths of infants, and is due to improper feeding. The death rate of infants as ordinarily computed is the number of infant deaths per thousand live births, and the infant death rate in France at that time was about 172 per thousand live births. Dr. Budin's work with 716 infants showed an infant death rate of 36.6 per thousand, or a decrease of almost 136 per thousand live births.

Dr. Budin's work was so successful that his plan of holding consultations for mothers and babies was very soon adopted by nearly every other European country. Some of these countries emphasized the importance of providing good milk for babies; others emphasized the importance of educating the mothers.

England, which was one of the first countries to adopt the French plan, was not particularly successful in lowering infant mortality, as the expert advice needed in this work with mothers was often lacking, and good milk, which was needed when breast feeding was impossible, was not provided, owing to its high price.

New Zealand, which has the lowest infant death rate in the world, has demonstrated that the educational work with mothers is by far the most effective means in reducing the infant death rate. After ten years of educational work, New Zealand has reduced her infant death rate nearly 50 per cent.

Child welfare work was started in New Zealand in 1907 by the Society for the Health of Women and Children. This society employed and trained visiting nurses to teach mothers how to care for their babies and to train women for motherhood. These nurses were (and still are) called the "Plunket nurses," after Lord and Lady Plunket. Lord Plunket was at that time Governor of New Zealand, and both he and Lady Plunket played a very important part in building up this society. The society is a private enterprise, but has always had the staunch support of government officials, and has worked in the closest co-operation with the government, from which it now receives a public subsidy.

Dr. Truby King of New Zealand said that the success of the work was due to the fact that training in child care was made fashionable. He further stated, "I began at the top in New Zealand and worked down, having the most prominent and intelligent women in New Zealand to be the first to take the courses in child care." This was a decidedly different way of handling the problem, as the European countries and the United States worked almost entirely with mothers and babies of the poor.

New Zealand not only ranks first in the lowest infant death rate in the world, but is also first in another important branch of the child welfare campaign, namely, that of birth registration. In a pamphlet issued by the United States Children's Bureau we learn that New Zealand, "in spite of its youth as a country, has established so perfect a system of birth registration that the figures are accepted by the authorities in European countries. In this, New Zealand stands in striking contrast to the United States, which of all the civilized countries has no general system of accurate registration. The fact that births and deaths are properly recorded has aided the health society in every stage of its work, and has made it possible at all times to gauge the effect of the work in reducing the number of infant deaths."

Practically all child welfare measures, both here and abroad, have been initiated by private enterprise, but in many instances the government or municipalities have recognized the need and importance of the work, and have either taken it over entirely or given a subsidy.

(*b*) The first direct action in the United States in the interest of child welfare was started by Nathan Strauss in 1892, when he opened his pasteurized milk laboratories in New York City. This was the same year that Dr. Budin started his "consultations for nurslings" in Paris. Nathan Strauss was convinced that dirty milk was the cause of the high infant mortality in New York, and that if milk were pasteurized it would kill the germs and save the babies.

In the Strauss laboratories milk was modified and pasteurized, and the formulas were provided by the best medical authorities in the city. This plan provided specially prepared milk for the babies of New York, but did not include the education of the mother in the care of her baby, nor in the preparation of its artificial feeding.

From 1892, when the Strauss laboratories were first opened, to 1902 many milk stations were established in New York and elsewhere, and the lowering of the infant death rate in New York during this time (from 288 in 1880 to 168 in 1902)[1] was attributed, in a large measure, to this distribution of clean and specially prepared milk to babies. The Strauss laboratories have recently been taken over by the city of New York.

---

[1] No official records of infant deaths under 1 year were kept in New York city until 1904.

In 1902 the Health Department of New York City, realizing that the education of the mother was necessary if the work were to be of permanent value, provided nurses to visit in the homes of babies receiving milk, and to instruct the mothers in the care of their babies.

In 1906 the New York Milk Committee was formed in connection with the New York Society for Improving the Condition of the Poor, but very soon afterward became a separate organization. This committee was formed to investigate the milk problem in its relation to infant mortality. Two years later (1908), after various investigations, it established seven modified milk stations in New York City. Milk was prepared the same as in the Strauss laboratories, and nurses were employed to supervise babies receiving the milk. One year later (1909) the committee abandoned these milk stations because it was believed that the mothers should be taught how to modify the milk, and because it was felt that too much emphasis was being placed on artificial feeding of infants.

In New York City the really intensive campaign by the city government for the reduction of infant mortality began in 1908, when a division of hygiene was created in the city health department. Under the direction of this new department, all public child welfare work was co-ordinated and reorganized, and after three years of work (in 1911) the department was able to bring together 150 private organizations interested in child welfare work into one large organization, now known as the Babies' Welfare Association.

The American Association for the Study and Prevention of Infant Mortality was organized in 1909, and was a direct result of a conference on prevention of infant mortality held by the American Academy of Medicine at Yale University. The chief work of this society has been the dissemination of knowledge regarding the causes of infant mortality, and suggestions for work in lowering the infant mortality rate. The name of this society has recently been changed to the American Child Hygiene Association.

In 1910 it was reported by the United States Public Health and Marine Hospital Service (now the United States Public Health Service) that only 28 large cities were doing definite preventive child welfare work. The work of these cities was developed along practically the same lines as the work in New York City.

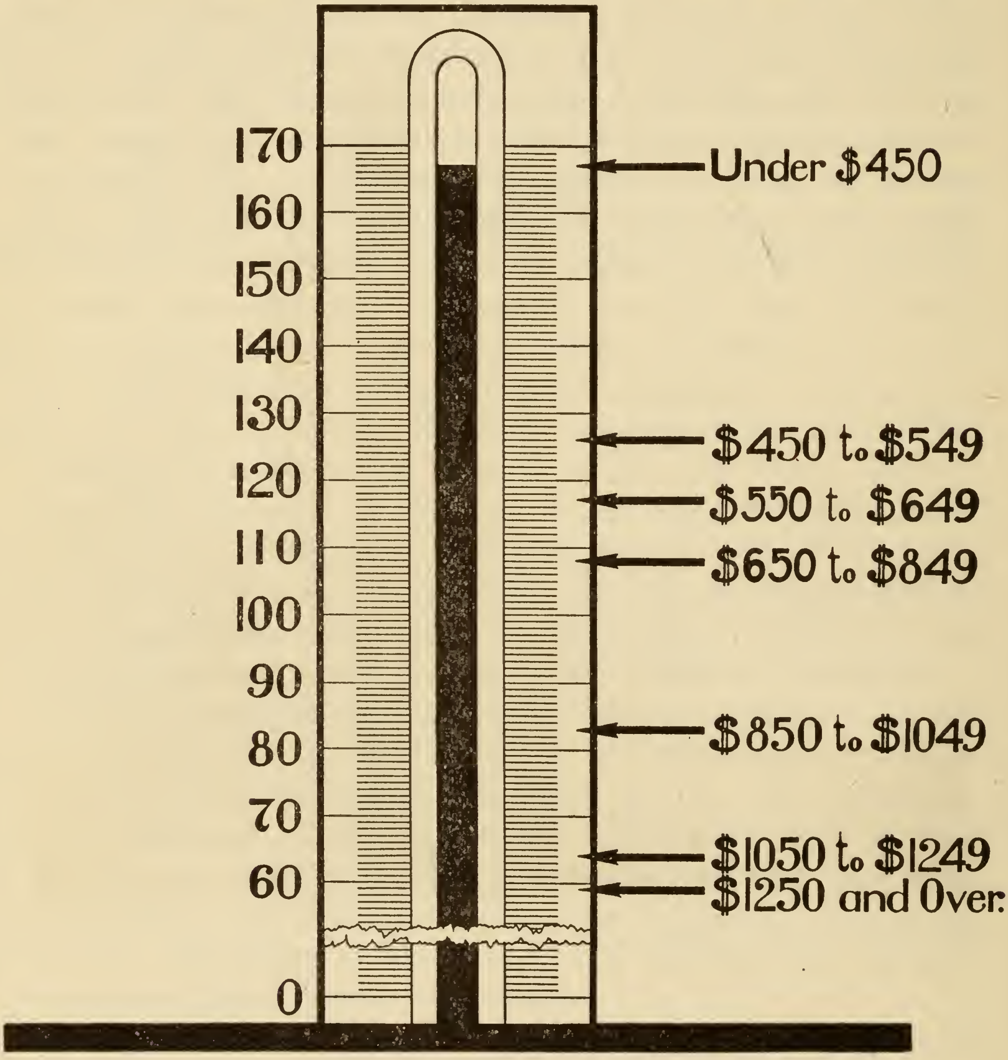
The necessity in the United States for Federal action in the protection and conservation of child life had been agitated for many years, and as a result of this agitation the Children's Bureau was created in the United States Department of Labor in 1912. It was felt that this Bureau could best aid in child welfare work through the collection of data pertaining to child life, and through the dissemination of knowledge obtained through intensive and extensive investigations. The Children's Bureau is now the center of information on all matters pertaining to children and child life, and it is interesting to note that this Bureau was established fifty years after the Department of Agriculture had been established as a center of information on all matters pertaining to farm plants and animals.

The law creating the Children's Bureau directed it to investigate and report upon all matters pertaining to the welfare of children, and the first subject of study undertaken by the Bureau was that of infant mortality, and a series of studies on this subject have been carried on since the Bureau was established. The following charts show some of the results of these studies, together with some charts showing conditions relating to infant mortality in Massachusetts.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

INFANT MORTALITY RATES, ACCORDING TO FATHERS' EARNINGS.

COMBINED FIGURES FROM SEVEN CITIES STUDIED BY U. S. CHILDREN'S BUREAU.



The baby death rate rises
as the fathers' earnings fall.

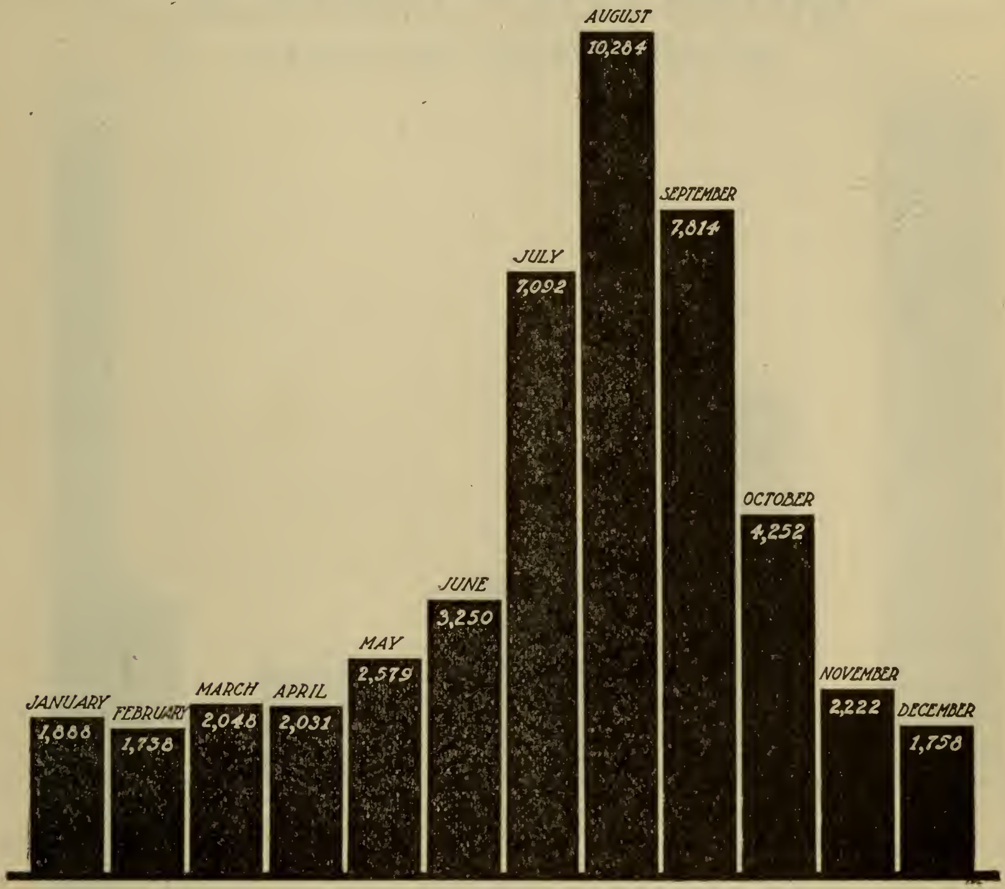
CHILDREN'S BUREAU, U. S. DEPARTMENT OF LABOR.

CHART 1.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

SUMMER PEAK OF INFANT DEATHS

FROM DIARRHEA AND ENTERITIS IN U. S. DEATH REGISTRATION AREA—1916.



ONE-FIFTH OF ALL THE DEATHS OF CHILDREN UNDER 2 YEARS OF AGE ARE CAUSED BY DIGESTIVE DISORDERS WHICH ARE LARGELY PREVENTABLE.

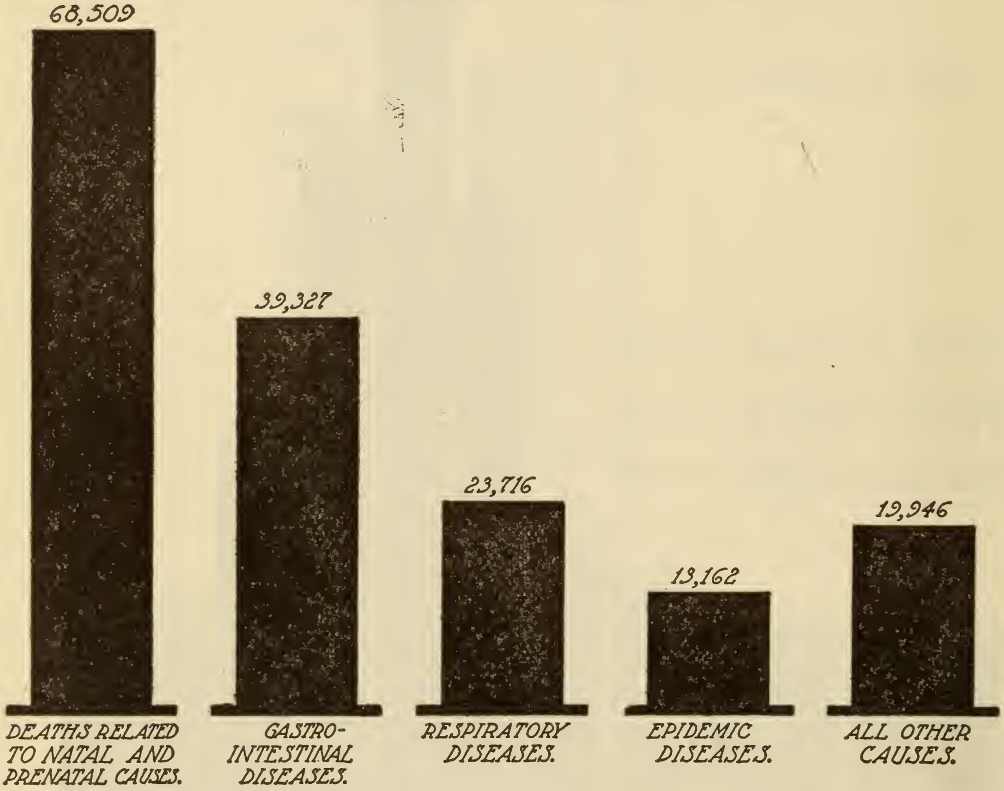
CHILDREN'S BUREAU, U. S. DEPARTMENT OF LABOR.

CHART 2.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

DEATHS UNDER ONE YEAR OF AGE, GROUPED BY CAUSES.

U. S. REGISTRATION AREA — 1916.



IN 1916 MORE CHILDREN DIED FROM CONDITIONS — RELATED TO THE HEALTH AND CARE OF THE MOTHER THAN FROM BAD CARE, BAD FEEDING, OR INFECTIOUS DISEASES.

CHILDREN'S BUREAU, U. S. DEPARTMENT OF LABOR.

CHART 3.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

DEATHS UNDER ONE YEAR OF AGE, BY MONTHLY AGE GROUPS, IN MASSACHUSETTS.

TOTAL DEATHS UNDER ONE YEAR. (1916) 9,334.

3,939 BABIES DIED DURING FIRST MONTH OF LIFE IN MASSACHUSETTS.

5,595 DIED DURING THE OTHER ELEVEN MONTHS OF LIFE.

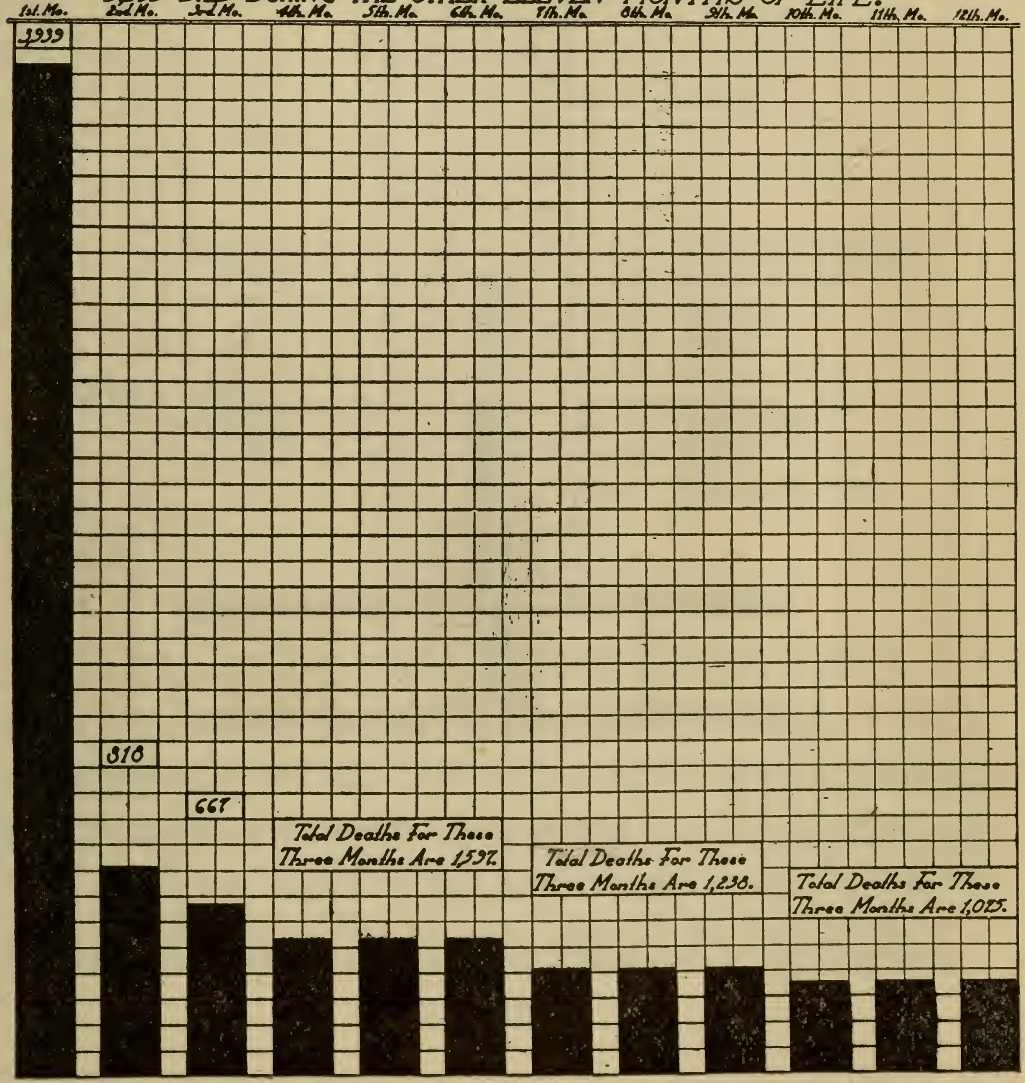
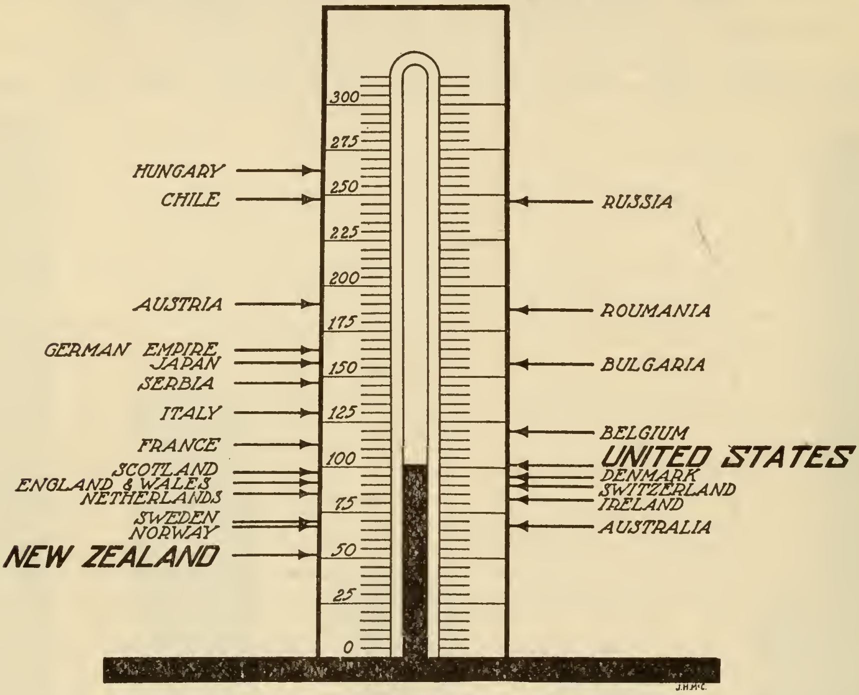


CHART 4.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

INFANT MORTALITY THERMOMETER.

DEATHS UNDER 1 YEAR OF AGE PER 1,000 BIRTHS.



WITHIN THE FIRST YEAR AFTER BIRTH, THE UNITED STATES LOSES 1 IN 10 OF ALL BABIES BORN. IT RANKS ELEVENTH AMONG THE PRINCIPAL COUNTRIES OF THE WORLD. NEW ZEALAND LOSES FEWER BABIES THAN ANY OTHER COUNTRY.

RATES ARE FOR LATEST AVAILABLE YEARS UP TO 1916.

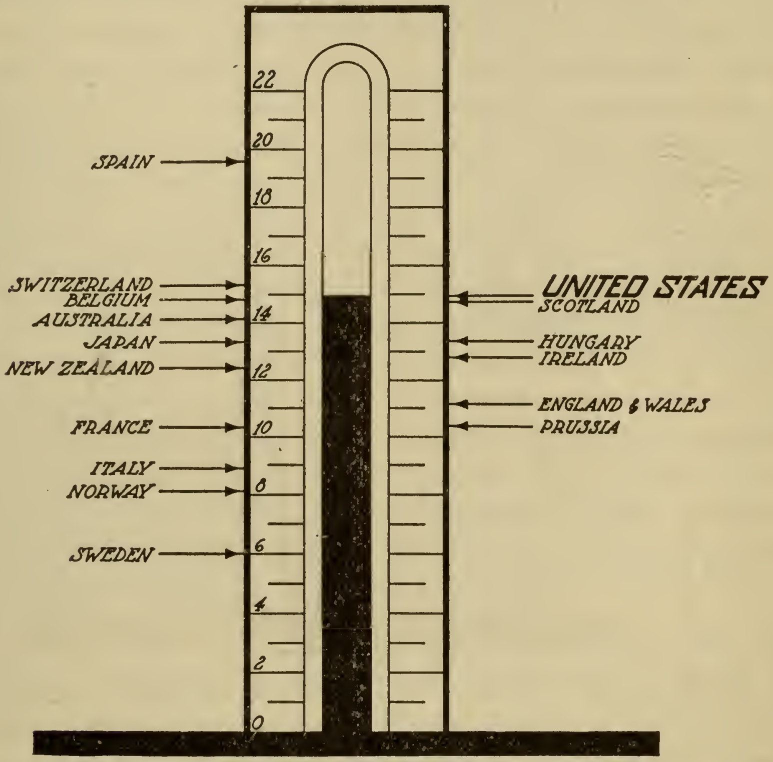
CHILDREN'S BUREAU, U.S. DEPARTMENT OF LABOR.

CHART 5.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

MATERNAL MORTALITY THERMOMETER

AVERAGE DEATH RATE PER 100,000 POPULATION FROM CONDITIONS RELATED TO PREGNANCY AND CHILDBIRTH, 1900–1910.



THE UNITED STATES LOST OVER 16,000 WOMEN IN 1916 FROM CHILDBIRTH. WE HAVE A HIGHER MATERNAL DEATH RATE THAN ANY OTHER OF THE PRINCIPAL COUNTRIES EXCEPT SPAIN OR SWITZERLAND.

CHILDREN'S BUREAU, U.S. DEPARTMENT OF LABOR.

CHART 6.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

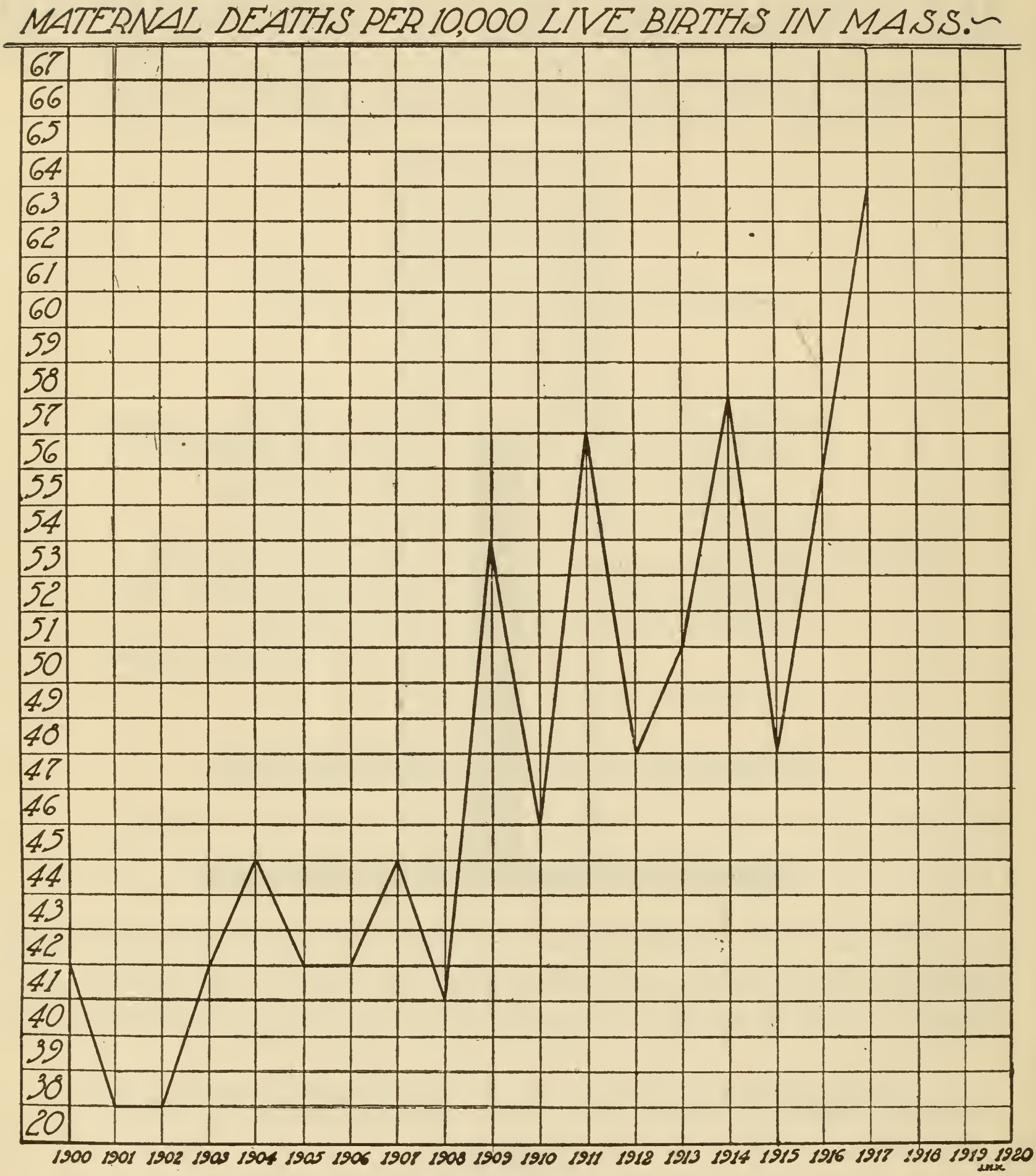


CHART 7.

Chart 1. — This chart shows the results of investigations by the Children's Bureau of the relationship of infant mortality to poverty, and shows that "poverty is the baby's worst enemy." It also shows that "as the father's earnings decrease, the infant death rate increases." Low wages very often go hand in hand with ignorance, and poverty and ignorance are classed as the two great causes of a high infant mortality. It may be assumed that the high infant mortality in families where the father received a very low wage was due to the fact that the prenatal and obstetrical care necessary to insure healthy mothers and babies was unavailable because of poverty and ignorance.

Chart 2. — This chart shows "that one-fifth of all the deaths of children under *two* years of age are caused by digestive disorders, which are largely preventable." The greatest number of deaths occur during the hot weather because of the greater danger of contamination of milk in summer, and also because of the fact that, even with a public milk supply which is clean and wholesome, many mothers are ignorant of the proper methods of caring for milk in their homes, which results in digestive disorders in babies. It is also true that during the very hot weather the babies' resistance to disease is lowered.

Chart 3. — This chart shows "that in 1916 more children died from conditions related to the health and care of the mother than from bad care, bad feeding or infectious diseases." This is conclusive evidence that any intelligent child welfare program must provide for prenatal and skilled obstetrical care for mothers.

Chart 4. — This chart shows that approximately 41 per cent of the total number of infant deaths occurs in the first month of life. A similar chart published by the Children's Bureau shows about the same proportion of infant deaths under one month for the death registration area of the United States.

The Children's Bureau gives the following reasons as the chief causes of this high early infant mortality: (1) income insufficient for the family needs; (2) venereal disease of the parents; (3) health condition of mother during pregnancy; (4) unskilled assistance during confinement; and (5) lack of care during the lying-in period. It should be remembered that these infant mortality figures do not take into consideration the "stillbirths," which may be due to the same causes and of which there were 3,779 in Massachusetts in 1918.

Chart 5. — This chart shows "that within the first year after birth the United States loses *1* in *10* of all babies born. It ranks *eleventh* among the principal countries of the world. New Zealand loses fewer babies than any other country." This chart also shows the need of vigorous child welfare work in the United States, as it seems almost criminal to lose 1 out of every 10 children born, when New Zealand has demonstrated that many of these deaths are unnecessary.

Chart 6. — Maternal mortality is a very important part of any child welfare program, because a child who is left motherless is deprived of the first essential to healthy babyhood, — breast feeding,— and the mortality among motherless babies is very high. "The United States in 1916 lost over 16,000 women from childbirth. We have a higher maternal death rate than any other of the principal countries except Spain or Switzerland." Of the number who die annually in the United States, nearly one-half died from puerperal septicemia, a disease proven to be almost entirely preventable. Here, again, the chief causes for this deplorable condition are ignorance (among the rich and poor) and poverty, and communities are now realizing that these conditions must be remedied.

Chart 7. — The maternal mortality in Massachusetts shows an increase of 70.3 per cent during the past sixteen years, and, taken in conjunction with the high early infant mortality, points very clearly to the next step in the child welfare program, that is, in the improvement of prenatal and obstetrical care. The work of the Children's Bureau has shown conclusively the close relationship between poverty and infant mortality. This fact has also been emphasized in a statement by an official of the United States Public Health Service who states that "too much emphasis cannot be laid upon the fact that four-fifths of the infant death rate occur among the poor."

One of the most important pieces of work which the Children's Bureau has accomplished is that of children's year (1918). The object of children's year was "to popularize the child welfare movement," and the aims were "more centers for prenatal and infant care, more public health nurses and more divisions of hygiene," by city or State. The effects of this wonderful program of the Children's Bureau carried out in 1918 cannot be overestimated. Since the establishment of the Children's Bureau, thirty States have created child welfare divisions (December, 1919), and it can safely be assumed that the Children's Bureau is responsible in a large measure for the creation of these divisions.

(*c*) The history and development of the child welfare movement in Massachusetts is closely connected with the history and development of visiting nursing associations. Visiting nursing associations, while not primarily organized and maintained for the care of children, have always included the care of children in connection with their work with adults. For this reason they have been very influential in improving conditions surrounding child life, and because of the educational side of their work they have been an important factor in arousing community interest, which is always a vital part of any educational program. This is particularly true in Massachusetts, where visiting nursing has been the impetus for many definite child welfare activities.

Boston has been the center of many child welfare organizations, which have been helpful in starting similar work in other parts of the State. In 1909 the Milk and Baby Hygiene Association was organized, and was at that time practically the only organization in Massachusetts doing purely baby work and laying particular emphasis on prevention. When the Baby Hygiene Association was organized in 1909, it took charge of ten milk stations which had recently been opened by a committee on modified milk stations. At the present time the Baby Hygiene Association operates but four of the original ten milk stations, having eliminated six during the past ten years. The association began work with one visiting nurse, and the work has grown enormously during the past ten years. The association now employs 30 nurses, 5 dietitians (who look after the diet of the pre-school child), and has 17 separate stations for well baby clinics. The Baby Hygiene Association originally cared for children up to one year of age, but is now expanding its work to include the care of children through the pre-school period. This work is being extended as rapidly as their resources will allow. The society is a private organization, and is supported entirely by private funds. The Baby Hygiene Association of Boston has set the standards for much of the child welfare work which is now being carried on in many cities and towns in Massachusetts.

Boston, in 1911, established a Child Hygiene Division, and was among the first ten large cities in the United States to assume this most important phase of public welfare work.

In 1915 the Children's Bureau reported that in Massachusetts there were 114 organizations in 54 cities and towns (out of a total of 354 cities and towns in the State) who were doing definite child welfare work, and 22 of these organizations were in Boston.

Much valuable child welfare work has been accomplished throughout Massachusetts, and the work of the Infant Hygiene Association of Holyoke shows what can be done by a comparatively small organization working in a small community. This association was organized in 1911, and in May, 1919, the work was taken over by the city, and is now managed by a child hygiene commission.

The infant death rate in Holyoke in 1911 was 147 [1] (exclusive of the non-resident deaths in the children's institution located there), and in 1917 the rate was 119.2 (excluding non-residents, as above). The Infant Hygiene Association of Holyoke undoubtedly did its share of the work in reducing the infant mortality, and that the city has recognized this fact is shown by its action in taking over the work.

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[1] Infant death rate, including Brightside: 1911, 183; 1917, 195.

Massachusetts was among the first six States to recognize the need and value of a distinctly child welfare department, and in 1915 a Division of Hygiene was created in the State Department of Health.

Perhaps the one thing that has given the greatest impetus to the child welfare movement, both in this country and in Europe, has been its adoption as a war measure. During the late war, governments were forced to see the tragic results of governmental neglect in not providing the necessary health resources, which, if they had been available to the people, would have prevented great numbers of the "physically unfit."

In May, 1917, the Health Commissioner of Massachusetts appointed a child conservation committee, and the message to the Governor of the State "referred to the conservation of child life as being the most important type of conservation in this time of national stress." This child conservation committee planned to make a survey of every city and town in the State for the purpose of ascertaining the health conditions, and when this was finished they proposed to make such recommendations as would remedy conditions responsible for ill health. This program was carried out and the work practically finished late in 1918, and the following report on the immediate results obtained was given: —

> The sum of $65,000 has been raised for child welfare work in the various cities and towns of Massachusetts.
>
> There have been employed 31 new public health nurses, and 15 authorized but not yet available.
>
> There have been 31 new child welfare stations established.

The present program of the Division of Hygiene is distinctly educational in its scope, and may be roughly divided into five groups, as follows: —

Infant hygiene.
Hygiene of pre-school child.
Hygiene of school child.
Hygiene of adult life (including maternal hygiene).
Cancer and the wear and tear diseases of adult life.

The division makes intensive surveys bearing on different phases of child welfare work, and publishes and distributes educational literature on health subjects. One feature of the work is the lecture service which was inaugurated in 1915, and which offers to the people of the State information on health matters. Lantern slides and a number of moving-picture films are available to use, either for illustrating the lectures or separately, as desired. The Department also has a traveling child welfare exhibit which is shown in various parts of the State at health weeks and at many of the agricultural fairs. A nurse from the Department is in charge of this exhibit, and is available to give advice on health matters or to explain details of the exhibit which may not be understood. The exhibit consists of a complete outfit of infant clothes, bassinet made from a clothes basket, and a home-made refrigerator. It also includes an exhibit on the proper food for children from three to six years old, one on dental hygiene, and illustrated panels on the various phases of child welfare.

Summary and Needs.

III. (*a*) Parenthood is the greatest of all human responsibilities, but there is less training given for this vocation than for any other. This training in parenthood should begin in childhood in order that the coming generation may be assured of a healthy body and a sound mind.

(*b*) The data collected by the Children's Bureau, and the facts furnished us by the pioneer workers in the child welfare movement, point to ignorance, an insufficient income, the wage-earning mother, and poor housing (including overcrowding) as the chief causes of infant mortality. This shows us that the problem is an economic one and must eventually be solved, but in the meantime it is agreed that the problem of safeguarding the health of expectant mothers is a public responsibility, and that it is a part of government work to educate citizens in matters pertaining to health and to provide adequate medical and nursing care wherever needed. Some of the means for providing such care are through various clinics (prenatal, postnatal, dental and venereal, etc.), and through systems of maternity benefits. Bills were introduced into the Massachusetts Legislature this year (1920), one of which would allow cities and towns to establish and maintain centers for any kind of preventive health work, and one which would provide maternity care for mothers.[1]

---

[1] The first one, allowing cities and towns to establish and maintain centers for preventive health work, was passed and is now a law. The second one, providing for a system of maternity benefits, was not passed. However, a special commission was appointed to investigate the need for such a law, and will report its findings to the Legislature at the special session in November, 1920.

Many hospitals in Massachusetts have prenatal clinics in connection with their obstetrical work, and many visiting nurses do prenatal visiting in connection with their regular work. This work, however, is comparatively new, and is seldom done in a systematic way and therefore is not very effective.

(*c*) The maternal and early infant mortality show us conclusively that prenatal and obstetrical care must be improved, and the responsibility for improving this care and the lying-in facilities during childbirth lies chiefly with the medical and nursing professions. It is their duty not only to use the scientific knowledge which they possess, but to disseminate that knowledge so that the general public may know what they have a right to expect.

(*d*) Controlling conditions harmful to the health of mothers and babies is a public responsibility, but governmental agencies must be backed by intelligent public opinion. This control of conditions may be secured through investigative and legislative work concerning the amount and causes of mortality and morbidity of mothers and children. These investigations should include the amount of disability caused by illness, and the results of existing preventive measures, such as the treatment of eyes in preventing infantile blindness.

(*e*) Intelligent supervision of the health of the child and its environment includes health centers, dental and nutritional clinics, adequate hospital care, supervision and licensing of children's homes, day nurseries and hospitals.

(*f*) "Infant mortality is the most sensitive index of social welfare, as it measures the intelligence, health and right living of parents, standards of wages and home conditions, standards of morals and sanitation of communities, efficiency of physicians and nurses, health officers and educators," but we cannot know what our infant mortality is without complete and accurate birth registration.

Massachusetts is one of the twenty-three States in the Union included in the birth-registration area (that is, having at least 90 per cent of the births registered), and was among the first to keep public records of vital statistics. There is still much to be desired, however, in the collection of data and compilation of statistics to help us in planning future work. With the exception of certain communicable diseases, we have no reliable figures which show us the amount of sickness and disability caused by sickness. Therefore we have no scientific way of knowing along what lines or to what extent we should plan to enlarge our health program.

IV. One can readily see by this brief history of child welfare work that the nurse has become an indispensable part of constructive child welfare activities. Never in the history of the world has the nurse played such an important part in preventive medicine as she does to-day. This does not mean that she in any way encroaches on the work logically belonging to physicians, but it does mean that an entirely new field has been opened for the nursing profession. This fact adds greatly to nurses' responsibilities in establishing and maintaining high standards of work, and also greatly increases their opportunities for service.

The keynote of child welfare work is "health," and it is necessary that public health nurses learn to recognize normal, healthy individuals, and also to recognize the very earliest symptoms of any deviation from the normal. In hospital work we seldom come in contact with early symptoms and do not have the opportunity to observe them, but a public health nurse must be a particularly keen observer, and learn to know and be quick to recognize any abnormal or subnormal condition.

The public health nurse should be first, last and always a teacher of "health," how to secure it, and how to maintain it. Since it has been recognized that public health is the most important of all public service, the demand for well-trained public health nurses far exceeds the supply. The data which have been collected by the Children's Bureau show the fertile field in which public health nurses have an opportunity to work, and surely no woman can do greater service to humanity than to effectively help in reducing the number of infant and maternal deaths from preventable causes.

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SCHOOL HYGIENE.

By Merrill Champion, M.D., C.P.H., Director, Division of Hygiene, Massachusetts Department of Public Health.

IN all the field of public health activity there is surely no corner which offers greater returns in the way of health dividends than does school hygiene; and yet it must be said with regret that there is no program more promising on paper and more disappointing in execution than is the school hygiene program.

There are many reasons for this state of affairs. Foremost, is the fact that school hygiene is essentially a community responsibility, and as yet the sense of responsibility of the community for the health of the school child is not any too well developed. Next, there is still much uncertainty in the minds of many as to whether medical school inspection is more properly a function of a school committee or of a board of health. Lastly, in Massachusetts, ambiguously worded laws and an overdeveloped sense of independence on the part of cities and towns have prevented proper co-ordination and stimulation of local activity. As the result of all these forces, the sum total of medical school inspection in this State has been most disappointing.

A curious haziness exists in the minds of many as to the meaning of the term "school hygiene." Hygiene may be defined as the science of the preservation of health; school hygiene is the science of the preservation of health as it applies to the school child. Conditions surrounding the school child cannot be said to be normal. He has graduated from the free, nomadic life of the pre-school child into an environment of restriction and discipline. It is a period of adjustment to the treadmill of civilized existence. Physical and mental changes are taking place which will have a profound effect upon later life. It would seem as if little thought were needed to convince any one of the desirability of constant supervision of the health of the school child.

In these days when money seems the criterion for so many things we can estimate the value placed by the community upon the services of school physicians by a study of salaries paid such officials. Studies made in 1915 and 1916 by the State Department of Health show that most communities place a very low money value upon medical school inspection. Some school physicians are paid as little as $10 per year, in spite of the fact that the law calls for an annual examination of each school child of a character sufficiently searching to detect defects which are likely to prevent the child from taking full advantage of the educational opportunities offered him. It is fatuous to suppose that this service can be obtained for $10 a year or ten times that sum, except in our tiniest communities. We cannot get something for nothing, whether it be groceries or medical service.

Let us now consider what constitute the essentials of school hygiene. We must have, first, a law under which to work; this may be of a permissive nature or mandatory. The latter is the type of legislation under which the work is carried on in this State. It should be recalled, in passing, that before such a mandatory law was enacted, the board of health of the city of Boston, in 1894, undertook medical school inspection, as did the town of Brookline. Other places followed shortly after. Antedating this by many years, however, the commission, appointed by the Governor in 1849 to make a sanitary survey of the State, recommended that "in erecting schoolhouses, churches and other public buildings, health should be regarded in their site, structure, heating apparatus and ventilation;" and again, that "measures be taken to ascertain the amount of sickness suffered among the scholars who attend the public schools and other seminaries of learning of the Commonwealth." Following the latter recommendation, studies were made by Dr. Henry P. Bowditch of the physical growth of school children in Boston, descriptions of which may be found in the annual reports of the State Board of Health of Massachusetts for the years 1877 and 1879.

In spite of these excellent beginnings, it was 1906 before legislation was enacted upon the subject of school hygiene. In accordance with this and subsequent legislation, Massachusetts now has a system whereby each city or town is supposed to have adequate medical examination for its school children, and adequate instruction in hygiene. That the majority of places have neither is a fact not sufficiently well recognized.

It would seem worth while to point out in some detail various points in the law under which school inspection is administered. The first striking fact is that the law is mandatory and applies to every city and town in the State. The examination provided for must be sufficiently thorough "to ascertain whether he [the pupil] is suffering from defective sight or hearing or from any other disability or defect tending to prevent his receiving the full benefit of his school work or requiring a modification of the school work in order to prevent injury to the child or to secure the best educational results." This, it is easily seen, calls for medical school *examinations* and not medical *inspection*.

A second point to be noted is that although school physicians are provided for in the act, no mention is made of the school nurse — obviously because school nurses were almost unknown in 1906.

A third and most fundamental point is that the work is really left in the hands of the local authorities with practically no State supervision. Theoretically this is an ideal plan, calculated to get the utmost out of community interest and pride. Practically, however, the result has been an utter lack of co-ordination, so that we have as many types of administration of this law as we have cities and towns in the Commonwealth.

Fourthly, provision is made for safeguarding the child about to go into industry. The system of working certificates whereby the child before going to work must bring to the school a promise of employment, and must pass a physical examination to determine his fitness for the job in question, seems well calculated to protect the child. In practice, however, the results have been extremely poor. Outside of Boston these certificates have, for the most part, been handed out indiscriminately, as is shown by the percentage of rejections of those examined. Cities have reported as many as 2,000 examinations for working papers without a single rejection for physical defect — manifestly a ridiculous result. The rejections should probably be at least 4 or 5 per cent or more. A factor in this result is undoubtedly that advantage has been taken of that provision of the law which allows the acceptance of certificates from private physicians who get paid little or nothing for the work. Under such conditions the temptation to shirk is well-nigh overwhelming. It must be said, however, that the record of the underpaid but regularly appointed school physician in many places is scarcely better.

The fifth point to be noted is one already referred to and which has been and is the subject of much controversy. The Massachusetts law provides that the school physician shall be appointed by the school committee in all towns, and in such cities as do not have the medical school inspection carried on by the board of health.

It must be acknowledged that much can be said for this plan. In the first place, it is argued that as medical school inspection concerns the school child, and is carried on in the school, to avoid confusion it ought to be under the school authorities. Again, it is pointed out that the school committees have a full-time agent in the person of the superintendent, while the average board of health does not have any such full-time agent. This is at present a good argument, though it is becoming increasingly less so as boards of health take their jobs more seriously and are taken more seriously by the communities they serve. On the other hand, much may be said in favor of board of health control. The community interest in the health of the individual centers in the board of health. It is not very logical to single out a few years in the life of the individual, and to say that during this time he is to be considered as apart from other human beings younger and older than himself, and therefore must have his health needs supervised by a separate body.

Further objections to school committee control of medical school examinations are that the control of communicable disease — an important factor in medical school supervision — is vested by law in the board of health, and in it alone; and that under the law the school committee can furnish medical supervision to the public schools only, while as a health measure the board of health can extend it to private schools as well.

As a result of this discussion, let us see if we can construct a rational scheme for the medical supervision of the school child. In so doing, statements will have to be made rather dogmatically, so as to avoid interminable explanation. The elements of a successful plan for the State of Massachusetts might be set forth as follows: —

State Guidance. — In view of our 354 municipalities, large and small, it seems probable that real progress will be slow in caring for the health of the school child unless there is some measure of State guidance. This, it may be said in passing, is not the same thing as State control. Individual initiative and growth should be preserved as far as possible. The question then arises, should this State guidance center in the Public Health Department or in the Educationl Department? Here we must differentiate between physical education, so called, and medical school examination. Physical education consists largely in teaching to children the simple rules of health, — how to exercise, sleep, eat, breathe, rest and play. For a long time to come this will have to be done by non-medical teachers, and of course should be a part of the regular school curriculum. Therefore physical education may be said to be a prime interest of the Educational Department. But it is also of the greatest interest to the Public Health Department, and must be co-ordinated with medical school examination. Hence the guidance of the State policy as regards physical education should be in the hands of the educational department, which should consult with the Public Health Department as regards the broad health principles involved.

When we come to medical school examination, on the other hand, conditions are reversed. Here the chief interest and responsibility should be with the Public Health Department, which should consult with the Education Department, especially in matters affecting school routine.

Local Control. — What has been said of the distribution of State responsibility is equally true of local conditions. Both the local school committee and the local board of health have legal and moral responsibilities for the health of the child in the public school. At present, under the law, in all the towns and in most of the cities the actual administration of medical school inspection is in the hands of the school committees. This should not preclude free co-operation between the school committee and the board of health. In fact, anything less is inexcusably bad civic policy. It would be advisable to have this co-operation enjoined by an amendment to the law.

Personnel. — Medical school inspection calls for a high degree of medical skill on the part of the school physician, and training and experience in medical and social work on the part of the nurse. Both doctor and nurse are essential to efficient control of school hygiene. Much has been said and written on the question of whole-time or part-time service on the part of the physician. Expediency usually dictates part-time service. At best, however, such service must be relatively unsatisfactory; especially is this true of a combination of general practice and school work. A general practice is a hard task-master. When people are sick they want a doctor at once, and it is for the doctor's interest to go at once. School work, being apparently less urgent, is pushed to one side. The job of school physician, properly understood, is a big enough one to take the whole of a man's best energies.

The school nurse is almost always a whole-time worker; that is, she gives her whole time to some form of public health work. Because of this very fact she has an advantage over the part-time school physician. The latter is competing with other practicing physicians; the school nurse is in competition with no one, and so arouses less enmity. This is not true of the nurse who practices medicine by making diagnoses and advising treatment, a procedure which is always to be deplored.

In the case of the school nurse, however, as in the case of the school physician, the exigencies of circumstances in many localities seem to make it necessary that the school nurse do other types of nursing as well. It is unfortunate if the other types must include bedside nursing. It happens almost invariably and inevitably that the bedside care of the sick sooner or later takes precedence in her thoughts over the apparently less urgent care of the comparatively well school child. Nevertheless, the small rural community, for the present, at least, probably cannot get school nursing upon any other terms. In certain Massachusetts towns it would be well worth while to try the scheme of having several small towns employ a school nurse (as well as a school doctor) in common. A county school nurse is also a promising possibility, though this would necessitate enabling legislation.

During the school summer vacation the school physician and school nurse can profitably be employed on other types of child welfare work. This is more easily arranged where the medical school work is in the hands of the board of health.

One word may well be said here as to the number of school physicians and nurses needed properly to carry on the work in a given community. This will, of course, vary with the type of population served and with the distances to be covered. The standards set up at the Child Welfare Conference at Washington serve as a good guide; namely, 1 school nurse for not more than 1,000 school children; a part-time physician with 1 full-time nurse for not more than

2,000 children; or 1 whole-time school physician and 2 whole-time nurses for each 4,000 school children.

School Examinations. — By statute in Massachusetts it is required that an annual examination be made of each school child. This examination is expected to be sufficiently thorough to detect any defect which would tend to prevent the child from getting the full benefit of his schooling. The average inspection which the school child undergoes falls miserably short of this. The child is entitled to a careful physical examination, embracing heart, lungs, nose and throat, sight and hearing, posture and especially nutrition. This examination should be done in private, and should include weighing and measuring. The latter phase of the examination should be repeated at frequent intervals, — monthly, or even weekly under certain circumstances. Children found below normal should, of course, be the ones to get the more frequent weighing. Taking the height and weight may well serve as a rough test at the beginning of the year to pick out the pupils most in need of early intensive attention.

The mental examination of the child is also indicated, though for the present it will probably be limited to the atypical or retarded child.

Need of Co-operation. — One of the points most in need of emphasis is that the supervision of the school child, whether from the point of view of medical school examination or physical education, should be a joint affair on the part of the school authorities, health authorities and parents. Much of the friction arising in administration comes through a failure to recognize this. The school and health authorities must themselves co-operate whole-heartedly. The school doctor must co-operate with the supervisor of physical education, and *vice versa.* It is illogical and sometimes dangerous to inaugurate or continue physical exercise without physical examination to determine existing physical defects. It is futile to examine children without some provision for getting something accomplished when defects are discovered.

The parent must not be overlooked in this scheme of things. She (it is usually the mother who responds) should be invited to be present when her child receives his annual physical examination. Both the school authorities and the parents will learn something from an interchange of ideas. Incidentally, much of the opposition to the physical examination of school children, seen in certain localities, would be obviated in this way. Such opposition is based largely upon misapprehension and ignorance rather than upon principle. Such a method takes a little longer, but shows greater ultimate results.

Conclusions. — We may briefly summarize this discussion on school hygiene thus: —

1. The medical supervision of school children and the teaching of the simple health habits are now recognized to be essential by all who have given any real thought to the subject of school hygiene.
2. Both these matters are of vital concern to parents, to school committee and to board of health.
3. Rules and regulations regarding both these phases of school hygiene should be made jointly by both education and health departments.
4. Administration of medical school inspection should be the job of the health department; administration of physical education and teaching of health habits, that of the school department.
5. Adequate supervision, as outlined above, calls for trained school physicians and nurses and teachers of physical education, and sufficient remuneration for these workers to enable the community to get efficient service.
6. Careful physical examination should be followed by every effort to get defects remedied. This means clinics or private medical care for the defective child, and physical education for the child when he is well. The defective child should be made well; the well child should be taught how to keep well.

THE JOLLY SIGNPOSTS.[1]

By Harriet L. Wedgwood, R.N., Health Instructor, Division of Hygiene, Massachusetts Department of Public Health.

ONCE upon a time a girl named Betsey-bobbit and a boy named Oliver set off for a walk down the road. In fact, they had set out upon a journey. What they were journeying for they did not know; but then, this was an adventure, so that did not matter. The Cuckoo-in-the-clock had told Betsey-bobbit about a Jolly Signpost down the road a ways; and a Little-Old-Man-in-a-Dream had told Oliver that the adventure was worth while, but had warned him to have a good bath and eat a good breakfast before he started. This both children did, and then set off together.

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There was no mistaking the Jolly Signpost when they came upon him. He had a painted head and a painted smile, but he winked his eye and waggled his finger and talked through his painted smile.

Oliver addressed him politely: "Which way, sir, shall we go now?"

"Over there's Do-as-you-Please Country" (waggling a finger towards Oliver's left), "but you won't have half as much fun as if you go the other way. Try Health Lane." And he waggled his whole hand toward a narrow lane at Oliver's right.

"Shall we go?" said Oliver to Betsey-bobbit, and Betsey-bobbit said, "Let's!" So they went that way.

The road was narrow and not smooth. They went on, however, till they came to the second Jolly Signpost, — a Tin Soldier with painted moustaches curled up at the corners of his mouth, and a musket at "shoulder arms."

"This is a very narrow lane," said Betsey-bobbit to the Jolly Signpost. "Must we stick to the path?"

"Better," said the Tin Soldier. "There are mires and pitfalls just off the path that you cannot see."

"We can do as we please, I suppose," said Oliver, with a smile.

"Do you *want to* do as you please?" demanded the Tin Soldier.

"Sure we do," cried both children in one breath; "sure we do." (Which was not quite grammatical, was it? They *should* have said "*surely*," but they didn't.)

The Tin Soldier set his gun down with a thud, and spun round excitedly on his wooden pin, but stopped at length and said quite calmly, and quite firmly, too: "There's heaps more fun in being a good soldier. Did you ever try it? Well, *try it.* Just remember what I say — *heaps more fun in being a good soldier.* Besides, you haven't seen the rest of the Jolly Signposts."

"Shall we go on?" asked Oliver of Betsey-bobbit, and she said, "Let's!" So they went on.

After a little while they came to a Wooden Girl pumping water from a wooden pump. The children never would have guessed she was a Jolly Signpost if she had not kept saying, over and over: "Have some water, have some water; best thing in the world to drink. Everybody ought to drink six glasses a day, if not more. Have some water, have some water."

"Shall we?" said Oliver, and Betsey-bobbit said, "Let's! But where are the cups?"

And the Wooden Girl answered her, still pumping away: "There's a Morning Glory vine just behind. Are you blind? Every flower makes a cup; you can sup, you can sup. Pick it up, pick it up. Pick a flower, make a cup," and on and on, talking every minute.

Oliver picked a pink flower and Betsey-bobbit a blue one. When they held them under the pump the flower-cups changed to full sized goblets, one pink and one blue. Each child drank a glassful of water and said it was good.

"Sure it's good," laughed the Girl. "Nothing better, nothing wetter." And her laugh sounded like the gurgle of a brook.

"I like the Jolly Signposts," said Betsey-bobbit to Oliver.

"You'll laugh when you see the next one," said the Wooden Girl, still pumping away.

The children trudged along, refreshed by the drink of water, but beginning to get hungry.

"Let's ask the next Signpost where we can get something to eat," suggested Betsey-bobbit, and Oliver thought it a very good plan.

What do you suppose the next Jolly Signpost was? You never could guess. I could not myself if I had not been told. It was a tiny Jersey Cow, for all the world like a real cow, but no bigger than a pussy cat, and a Dutch Dairy Maid, who was *clean* as CLEAN, with a wooden yoke on her shoulders and two buckets dangling from the ends of the yoke.

"This way, Children," called the Dutch Dairy Maid; "milk fresh from the cow." She sat down on her wee little milking stool and milked fresh sweet milk into one of the buckets. From the other of the two pails she took mugs, and sandwiches and fresh fruits.

Now Betsey-bobbit had a sweet tooth and ate far too much candy for her own good. She knew it, too; but she went up to the Dutch Dairy Maid and whispered in her ear. The Dairy Maid began to spin about till her buckets almost stood out straight from the yoke. At last she stopped and said to Betsey-bobbit, shaking her finger solemnly: "This is Health Lane. I thought that was plain. Now bread, milk and fruits you'll find quite handy; few ice-cream cones, and *no cheap candy!*"

The children laughed, for the Dairy Maid really looked funny. Betsey-bobbit did not really mind about the candy; she liked good bread and butter and milk, and besides these things there were apples and oranges. It was a fine lunch; both children ate heartily and were satisfied.

"I'll fetch some milk for your morning oatmeal when you get on the Health Way," said the Dairy Maid. "You'll find you like milk and oatmeal too, when you once get on the Health Way. This Lane leads to it."

The children felt sleepy after eating, but they went on till they came to sleepy little dell, where even the chirp of the cricket made one want to go to sleep.

"I can hardly keep my eyes open," said Betsey-bobbit, "but I refuse to sleep by day."

"Now what is the matter with sleeping by day?" drawled a curious voice. The children looked about. Where had the voice come from? All they could see, besides the road and the trees, was a stone post with a ludicrous face and long arms folded on his chest. On the top of his head was a broad-brimmed hat, big as a porch-umbrella, which shaded a stone bench piled with cushions.

As the children watched, the post began to speak, and they saw he was another of the Jolly Signposts.

"Best thing in the world to lie down after meals and have a rest. If you can sleep, so much the better."

He beckoned to them with one long finger and smiled a sleepy smile. The children came, curled up on the cushions, and while the Wood Pewee overhead called, "Slee-py, slee-py, so slee-py," they were fast asleep.

Oh, but they felt fine when they waked.

"What does make me feel so good?" asked Betsey-bobbit.

"I'll tell you," said the Jolly Signpost. "A little sleeping now and then is needed by the best of men. Take a nap every day, and sleep many hours at night."

"We will remember that," said Oliver.

"Well, if you are going to remember things," said the Jolly Signpost, with a wink, "remember what you have done already to-day — things that make you feel good and start you toward the Health Way. A good bath; a good breakfast; water between meals, plenty of it; plain food for lunch, and the right kind, — milk and fruits and bread and butter; keeping out of doors in the sun and fresh air; traveling in the right direction, even when it's a little hard; and keeping a cheerful mind. A pretty good start for two young people! But I might tell you one thing more. Come near and I'll whisper it: *learn to like the vegetables — all of them.*"

"We'll remember," said both children. "It's easy to remember when you feel fine and rested."

"So it is," said the Jolly Signpost. "Now sleep time is over, and sermons too. Run along."

With that he unfolded his long arms, pulled a string which rolled up his big umbrella-like hat into a fat turban round his head, and again folded his arms.

"Jolly, isn't it?" he said.

If you could have *seen* it, you would have laughed just as Betsey-bobbit and Oliver did, as they went skipping along down the lane till they came to a fine broad road.

"I expect this is the Health Way," said Betsey-bobbit. "I've heard of a Speedway and a Broadway, but never before of a Health Way."

"Then you shall hear of it now," said a solemn voice quite near them. They looked and saw it came from a Brown Owl with yellow eyes.

"I will tell you about the Health Way," said the Owl. "And, by the way, you should say '*suspect,*' not '*expect.*' Didn't you learn that in school? But about the Health Way. It's a fine big road that it's a joy to travel on, once you get to know it — and if you have sense enough to keep on it. Some try short cuts. I don't advise it. I *don't advise* it!"

"Why not?" asked Oliver.

"Short cuts don't get you anywhere. If you get one thing you're after you miss too many other things you wanted just as much. And you can't get them unless you do things right and stay on the Health Way."

"Are you a Jolly Signpost, too?" asked Oliver.

"To be sure," said the Owl. "You missed me, didn't you? You will miss one now and then; small matter, if you really get on the Health Way. Now you are on you must travel it every day."

"How does anybody know all these things?" asked Oliver, who was a bit doubtful.

"One learns," said the Owl. "And it's interesting. Wait a minute."

He hooted three times. An automobile horn honked three times in answer, and a machine was heard coming down the road.

The children were not prepared for what they saw, — an automobile to be sure, but no bigger than a baby's go-cart. In it was a Grinning Elf.

"I like your auto," said Betsey-bobbit. It was the cunningest thing she had ever seen, sleek and shiny, trim and tiny.

"I like yours," said the Elf.

"I haven't any," said Betsey-bobbit.

"Yes, you have. An auto's a thing that runs of itself. Your body's an auto," replied the Elf.

"How funny," said Betsey-bobbit.

"True, all the same," said Oliver.

"Ever really learn *how to run yours?*" asked the Elf, looking straight at Oliver.

"Why, not exactly," admitted Oliver, somehow feeling that he had neglected something he ought to have learned.

"Would you like to run your auto as you ought to?" asked the Elf. "There are teachers who will teach you *how* to run it *by yourself.*"

"Just what do you mean?" asked Oliver.

"Come with me." The Elf hopped out of his machine and led them to a beautiful bronze statue that stood beside the Health Way.

"He was a Greek," said Betsey-bobbit. "There's one like it in marble at our school."

"An athlete," said the Elf. "A beautiful body. A wonderful machine he had; and he *learned how to run it.*"

"I'd like to learn," said Oliver. "How does one learn?"

"There are Four Masters who live at the beginning of the Health Way: the Master of Health Habits, the Master of Work, the Master of Play, and the Master of Right Thinking. They will teach you if you ask them. You will like them."

"Shall we go to them? Shall we travel on the Health Way?" asked Oliver.

Betsey-bobbit hesitated a minute, then said, "Let's!"

"I believe it will be good fun," said Oliver.

The Bronze Athlete straightened up and waved an arm.

"That's the way, that's the way," he cried. "It is the *way that I learned.*"

"Will you just look at that!" cried Betsey-bobbit in astonishment. "Even he is just another Jolly Signpost."

So he was.

And this is the story of how One Nice Boy and One Nice Girl got started right on the Health Way.

They are still traveling on the Health Way every day of their lives, and finding it the most fun they have ever had.

INFLUENZA IN MASSACHUSETTS.

By Stanley H. Osborn, M.D., C.P.H., Epidemiologist, Massachusetts Department of Public Health.

THE recurrence of the influenza epidemic that had been predicted by certain public health officials appeared in Massachusetts during the third week in January, and continued for approximately a ten-week period, at the end of which time the cases had dwindled to the normal number to be expected in April.

Health authorities in the eastern States were warned of influenza by the appearance of the disease in Chicago early in January, and a week later a second center appeared in and about New York City, from which it spread through New York and Connecticut to Massachusetts. This was the opposite of the 1918 epidemic, when influenza spread from Massachusetts to Connecticut, chiefly by two movements.

Before discussing the recent epidemic, a brief review of the incidence of the disease in the past in Massachusetts is of interest.

HISTORICAL.

The following extract is taken from the annual report of the Massachusetts State Board of Health: —

> In the early history of Massachusetts it appears that influenza occasionally prevailed. In 1647, according to Governor Winthrop,[1] "a malignant fever prevailed, and an epidemic influenza passed through the whole country and universally affected the colonists and natives; but it was not very mortal. Wherein a special providence of God appeared; for, not a family nor but few persons escaping it, our hay and corn had to be lost for want of help; but such was the mercy of God to his people as few died — not above forty or fifty in Massachusetts, and near as many at Connecticut."
>
> In 1655 another epidemic distemper similar to that of 1647 passed through New England. It began in June, and few persons escaped.
>
> In 1697–98 the influenza began in November and prevailed until February in Massachusetts. Whole families and whole towns were seized at the same time. In the same year a "mortal disease prevailed so much in Fairfield, Conn., that well persons were not found to take care of the sick and bury the dead. Seventy died in three months out of a population of less than one thousand."[2]

From 1842 to 1888, inclusive, there were less than 100 deaths from influenza annually in Massachusetts according to the State registration reports. The average number of deaths annually for this period was 38, the largest number being 92 deaths in 1857, and the smallest, 8 deaths in 1884.

In discussing the mortality of the 1889–90 epidemic, the 1889 report adds:

> The aggregate loss of life which was occasioned by the epidemic of 1889–90 was large. The ratio of the deaths to the population in Massachusetts was about 12 per 10,000, while the ratio of deaths to the number of those attacked was 31 per 10,000.
>
> As compared with other epidemics, none within the memory of the present generation have had in so short a time so destructive an effect upon the population of the State. The cholera epidemic of 1849 caused about 1,200 deaths in Massachusetts in about three months, which was about the same ratio as compared with the population of that period. The smallpox epidemic of 1872–73 caused 1,679 deaths; but these were distributed throughout two years. But the recent epidemic of influenza, whose entire period of prevalence in the State was scarcely fifty days (December 20 to February 10), increased the mortality

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[1] Winthrop's Journal, Vol. II, p. 310.

[2] Report of Sanitary Commission of Massachusetts, 1850, p. 63

of the State in that time by about 2,500 deaths, which is equal to about 1.2 per 1,000 upon the estimated population.

The force of the epidemic was felt more severely in Massachusetts than in places farther south and in warmer climates, as was shown both by the mortality lists during the epidemic period and by the influence of the epidemic upon those diseases which followed in the train of influenza."

The peak of the 1889–90 epidemic was reached in twenty-two days, and 39 per cent of the population was affected. The average duration of illness was three to five days. The deaths from tuberculosis were increased among those individuals already ill with the disease.

Since 1888 there have been five epidemics of influenza or grippe in Massachusetts. Most of these have passed by with but little attention from the public, but the statistics following show distinctly certain years with high death rates in influenza and pneumonia. In 1912 these were separated into "undefined pneumonia" and "lobar pneumonia," and are given in another table.

Deaths from Influenza and Pneumonia in Massachusetts, 1889–1919.

YEAR.	INFLUENZA.		TOTAL PNEUMONIA.	
	Deaths.[1]	Death Rate (per 100,000).	Deaths.[1]	Death Rate (per 100,000).
1889,	27	1.2	3,440	158.2
1890,	411	18.4	4,038	180.6
1891,	546	23.8	4,337	189.5
1892,	967	41.3	5,020	214.9
1893,	296	12.4	5,499	229.8
1894,	370	15.1	4,101	167.8
1895,	457	18.3	4,652	186.1
1896,	150	5.9	4,703	184.2
1897,	380	14.5	4,796	183.3
1898,	231	8.6	4,206	157.0
1899,	570	20.8	4,993	182.2
1900,	709	25.3	5,282	188.4
1901,	539	18.9	4,046	141.8
1902,	170	5.9	3,772	130.5
1903,	370	12.6	4,293	146.5
1904,	304	10.2	4,183	140.8
1905,	443	14.7	4,416	146.5
1906,	203	6.6	4,176	135.1
1907,	510	16.1	4,415	139.5
1908,	337	10.4	4,044	124.8
1909,	237	7.2	4,157	125.6
1910,	250	7.4	4,781	141.5
1911,	163	4.7	4,059	117.9
1912,	170	4.8	3,874	110.3
1913,	204	5.7	3,315	92.7
1914,	129	3.5	3,393	93.1
1915,	232	6.3	3,736	101.2
1916,	239	14.3	4,013	106.3
1917,	494	12.9	4,028	104.9
1918,	13,783	283.1	13,626	249.6
1919,	3,052[2]	76.4	4,954[2]	124.1

[1] Statistics from State registration reports.

[2] Incomplete.

From a study of the annual death rates it is evident that for the periods 1890–92, 1894–95, 1899–1901, 1907, 1918 and 1919 the death rate of over 15 per 100,000 is abnormally high, and that influenza was epidemic in the State. It is also surprising to find that a rate of under 10 prevailed, during the period 1889–1908, only in the single years of 1896, 1898, 1902 and 1906. Then follows the long period of 1909 to 1915, inclusive, during which no year exceeded a rate of 7.4 deaths per 100,000. It seems possible that this latter period of seven years of inactivity, during which the death rate of influenza was particularly low, was the means of preparing the population as a fertile field of susceptible material for the rapid dissemination of the disease.

It is known that certain nations and populations are immune to diseases more than others. In the case of influenza there may be an immunity conferred on a population by having had the disease continuously for a period of years, and this may be sufficient to prevent a high death rate and may account for the incidence from 1893–1908 in the State. But if, on the other hand, the disease is abnormally low, as in the State from 1909 to 1914, this would tend to diminish the population's immunity, and perhaps account for the terrific death rate of 283 per 100,000 in 1918.

The increase in the death rate for 1916 and 1917 is parallel, in a way, with the years 1890 and 1891 which preceded the high death rate of 1892.

It is especially interesting to note that the pneumonia rate for the period of 1909–15 followed the fluctuations of the influenza rate.

The severity of the 1918 epidemic is apparent when the rates for that year are compared with the rate for 1890–92, the 1918 rate being seven times as great as the rate of 1892, the high year of the former period.

To summarize briefly, influenza had a death rate of over 10 per 100,000 for sixteen out of the nineteen years in the period 1890–1908, inclusive, whereas from 1909–15, a seven-year period, the death rate fluctuated between 3.5 and 7.4 per 100,000 during the whole period.

It is difficult to decide what factor produced this low death rate. It may have been due to an organism of low virulence, or the population may have become immune because of the undue activity of the disease prior to 1908, or it may have been absent from many communities.

At any rate, because of the absence of influenza, great numbers of people from 1908 on were not immune by previously having had the disease, particularly the younger groups, if such immunity is conferred.

The 1918 epidemic had its highest fatality rate in the 1 to 4 and 25 to 39 year age groups, the rate for the 5 to 19 year group being comparatively low.

The table below indicates the manner in which influenza affected the total pneumonia deaths as classified under No. 92 of the International List Causes of Death. Normally, of the total deaths from pneumonia (undefined) 80 to 90 per cent are lobar pneumonia deaths, but this ratio was noticeably decreased during the epidemic years of 1918 and 1919.

It is of interest, also, to note that the years of 1916 and 1917 had a particularly high percentage of lobar pneumonia deaths, and that the influenza death rate was high. It demonstrates that the exact relation between influenza and lobar pneumonia is still unknown.

Pneumonia and Lobar Pneumonia.

YEAR.	TOTAL PNEUMONIA (92)[1]		LOBAR PNEUMONIA (92)[1]		Per Cent of Total Pneumonia Cases.
	Deaths.	Death Rate.	Deaths.	Death Rate.	
1912,[2]	3,874	110.3	1,626	46.3	42
1913, ...	3,315	92.7	2,523	70.7	76
1914, ...	3,393	93.1	2,804	76.8	83
1915, ...	3,736	101.2	3,194	86.7	85
1916, ...	4,013	106.3	3,694	97.8	92
1917, ...	4,028	104.9	3,786	98.5	94
1918, ...	13,626	347.8	9,921	253.1	73
1919, ...	4,954	124.1	2,508	62.8	51

[1] International List of Causes of Death.

[2] Year lobar pneumonia was made a separate cause of death.

THE INTERINFLUENZA EPIDEMIC PERIODS.

The United States Bureau of the Census issued the following statement on January 31: —

> In the November 8 issue of the "London Lancet" appeared a prediction by Dr. John Brownlee, D.Sc., based on a careful study of past influenza epidemics, that a recurrence of the 1918 influenza epidemic would occur in January or February, 1920.
>
> Dr. Brownlee found that influenza epidemics recurred at intervals of thirty-three weeks, providing the thirty-third week did not fall between June and

December, in which case the recurrence would be expected at the end of sixty-six weeks or ninety-nine weeks, and therefore he regards the fall epidemic of 1918 as an exception to the rule. In the United States we are now having a recurrence after sixty-six weeks.

A bulletin issued by the Bureau of Census dated March 23 showed that the period of sixty-six weeks' interval between the peak of the 1918–19 epidemic and the epidemic of this year held true for many cities all over the United States. No explanation has been reached to account for this interval.

Past Massachusetts statistics show that this period of thirty-three or sixty-six weeks holds true in the 1890–94, 1899–1900 and 1918–19 and 1919–20 epidemic periods, but that this "cycle" did not occur in the 1894–95 and 1907 periods, or the high death rate periods of 1903–05 or 1916–18.

The "cycle" of thirty-three and sixty-six weeks between peaks of epidemics is apparently limited to the severer epidemic years.

Epidemic of 1920.

The arrival of the epidemic was noted on January 20, when 64 cases were reported to the Department, whereas the total for the previous week was only fifty-eight cases. For comparison, on January 27, 482 cases were reported, and on February 2, 1,076 cases. Because of the allied character of the diseases, lobar pneumonia statistics also are given.

From the experience of 1918, educational measures were at once instituted by means of moving-pictures, slides, newspapers and lectures to warn the public, but no apparent effect was produced on the progress of the disease.

A survey of the neighboring States shows that apparently the infection to the south in Connecticut and New York City preceded the epidemic in Massachusetts, and it seems probable that the epidemic in Massachusetts spread from the New York City focus. New York State (exclusive of New York City) and Maine had their greatest incidence during the week ending February 14, whereas Vermont followed a week later, indicating that the disease spread from the south to the northern part of New England.

The first cases were reported in and around Boston, and rapidly increased, the height of the epidemic being reached sixteen days later, on February 4, 5 and 6. Although the peak as shown by case reports was on February 9, 10 and 11, this false peak was caused by the delay in mails due to the heavy snow storm of February 5, 6 and 7, and does not represent the true peak of the disease.

The present epidemic up to April 1 has not shown any tendency of a recurrence, such as produced the double peak in October and December, 1918, but the danger of this cannot be considered definitely passed until after May, if the past monthly distribution of cases is considered.

The disease ran a ten-week period, a shorter course in the State this year than the 1918–19 epidemic of 6 to 7 months, and was similar to that experienced elsewhere in the country.

Lobar pneumonia cases showed an immediate increase with influenza cases, and paralleled the curve of that disease. The types of pneumococcus present were usually Types III and IV.

SYMPTOMS.

The type of infection was milder than that of the winter of 1918–19. The predominating symptoms were sudden onset, backache, fever, nausea, vomiting, headache, accompanied by a general weakness. Occasionally prostration was marked, and epistaxis, intestinal symptoms and involvement of the lungs were noted. The disease ran a course of about seven days in the average case.

The use of vaccine for prophylaxis and treatment has proved apparently of no marked value. The use of human serum from convalescent patients has appeared in certain cases to be of benefit, but in other instances the results of its use have been discouraging.

ETIOLOGY.

The organism causing the initial attack of influenza is still in dispute. The belief that the Pfeiffer bacillus is a secondary infection as the pneumococcus and other pathogenic bacteria is gaining weight. Certain Japanese investigators have determined the disease to be due to a filterable virus, and French, British, Japanese and American investigators have incriminated the so-called "globoid bodies."

DURATION OF EPIDEMIC.

The 1918–19 epidemic began in September, but influenza was not made a reportable disease in Massachusetts until Oct. 1, 1918. For this reason the morbidity statistics of influenza in the State are far from accurate for that epidemic.

The morbidity rates for that epidemic are based on the cases reported from Oct. 1, 1918, to April 30, 1919, inclusive.

The 1920 epidemic lasted a much shorter period, from about January 20 to March 31, inclusive, but for practical purposes the cases and deaths reported from January 1 to March 31 are included in all rates in this article. All morbidity rates are as of July 1, 1920, based on 100,000 population estimated from the 1910 Federal and 1915 State censuses.

AGE DISTRIBUTION.

The age distribution of the influenza cases of the present epidemic was similar to the previous one, the larger number of cases being in the age groups of 0 to 4 years and 25 to 34. The 5 to 14 year age group suffered the least.

Case Incidence at Different Ages.

YEARS.	Per Cent of Total Cases.	YEARS.	Per Cent of Total Cases.
0 to 4,	10.0	35 to 44,	14.7
5 to 14,	12.0	45 to 54,	9.4
15 to 24,	19.4	55 to 64,	3.7
25 to 34,	27.9	65 and over,	2.9

SEXES.

The age distribution of influenza cases between the sexes was practically the same, considered as a whole, but as in previous epidemics the incidence of the males exceeded the females, 51 per cent being males and 49 per cent females. The age groups of the sexes showed that up to twenty-five years there were more cases among females, but after that age, the majority of the cases were males. The mortality statistics are not yet complete for the age groupings.

VIRULENCE.

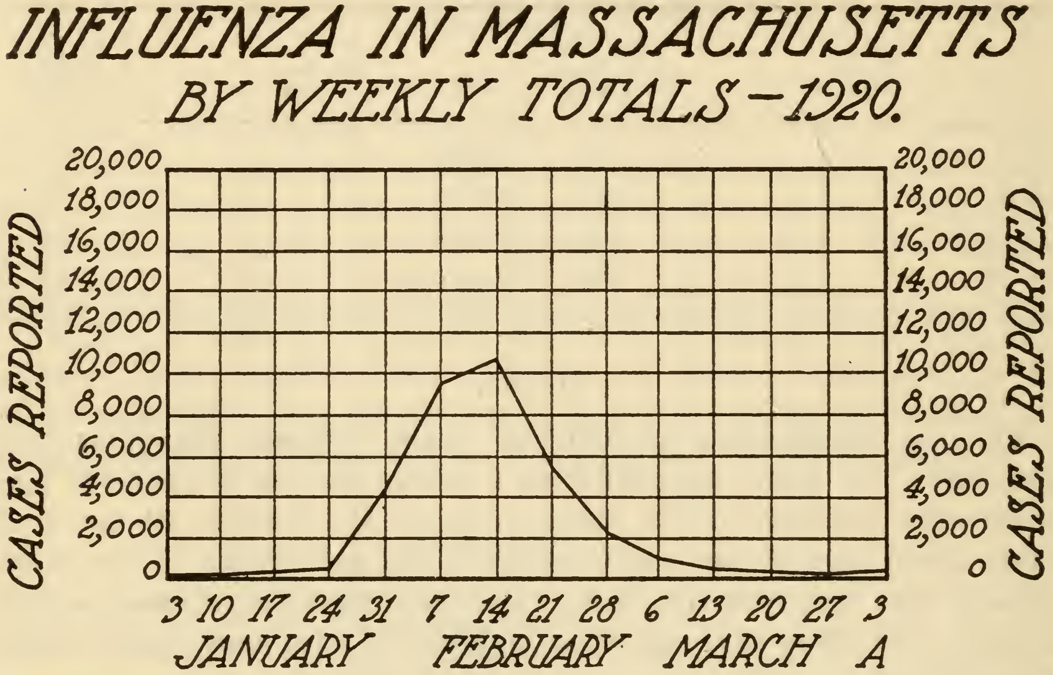
The virulence of the infecting organism, whatever it may be, was much less than in the previous epidemics. In 1918–19 the fatality rate was 7.6 per cent, whereas this year there is a rate of 2.5 per cent, judging from the death statistics that are available. There is a great source of error in the fatality rate of influenza because of the many mild cases that are not reported and which would tend to lower this rate considerably.

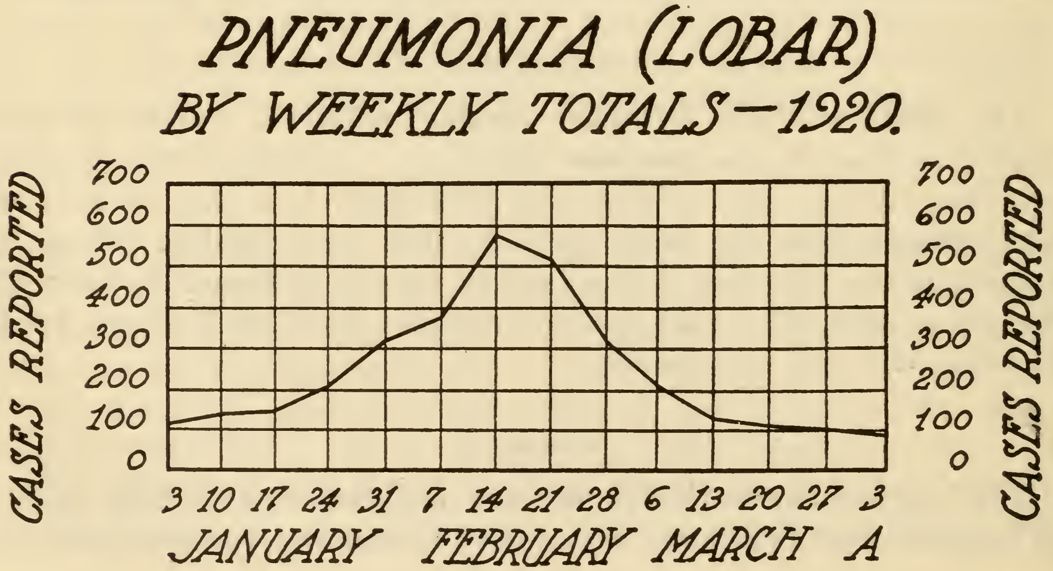
IMMUNITY.

The fact that the morbidity rate was much less in 1920 than 1918–19 suggests that there may be a definite immunity conferred by the disease or a great decrease in the virulence of the causative organism, but as is discussed further on, it would appear that perhaps both of these factors played a part in starting an epidemic.

Morbidity, Mortality and Fatality Rates.

From Oct. 1, 1918, to April 30, 1919, inclusive, there were 184,419 cases of influenza reported and 13,419 deaths, giving a fatality rate of 7.3 per cent. In September, 1918, there were 2,939 deaths, making a total of 16,358 deaths in Massachusetts during the epidemic from Sept. 1, 1918, to April 30, 1919.





In the present epidemic there were 35,633 cases from Jan. 1, 1920, to March 31, 1920, and incomplete records give 906 deaths, giving a fatality rate of 2.5 per cent.

Obviously, the fatality rates for both epidemics are much too high because of the non-reporting of the milder cases of influenza. A rate of 3 to 5 per cent for 1918, and of less than 1 per cent for 1920 would be nearer the true fatality rates of these two epidemics.

Monthly Incidence of Cases in 1918–19 and 1920 Epidemics.

1918–19 Epidemic.

	INFLUENZA.		LOBAR PNEUMONIA.	
	Cases.	Deaths.	Cases.	Deaths.
1918.				
September,	–	–	3,114	2,364
October,	88,494	8,274	3,797	3,298
November,	14,750	1,022	615	547
December,	42,018	1,804	1,203	852
1919.				
January,	28,725	1,736	1,096	643
February,	6,435	616	663	355
March,	2,928	379	588	354
April,	1,069	143	463	287
May,	406	66	352	181

1920 Epidemic.

	INFLUENZA.		LOBAR PNEUMONIA.	
	Cases.	Deaths.	Cases.	Deaths.
1919.				
December,	147	21	441	207
1920.				
January,	5,076	54[1]	850	263[1]
February,	28,340	733[1]	1,702	613[1]
March,	2,215	119[1]	601	226[1]

[1] January, February and March deaths are incomplete.

A comparison of the mortality, morbidity and fatality rates of influenza and lobar pneumonia is of interest.

Influenza and Lobar Pneumonia.

	Cases.	Deaths.	Case Rate (per 100,000).	Death Rate (per 100,000).	Fatality Rate (Per Cent).
1918.					
Influenza,	145,262	13,783	3,704.7	351.5	9.5
Lobar pneumonia,	13,374	9,921	341.1	253.0	74.1
1919.					
Influenza,	40,417	3,052	1,012.4	76.5	7.6
Lobar pneumonia,	4,585	2,508	114.9	62.8	54.7
1920.[1]					
Influenza,	35,633	905[2]	883.4[1]	22.4[1]	2.5
Lobar pneumonia,	3,158	1,085[2]	78.3[1]	26.9[1]	34.3

[1] Three months.

[2] Deaths incomplete.

It is evident that in high influenza years the lobar pneumonia statistics have a source of error in them, or the organisms causing the disease are of a lower virulence than those that prevail during non-influenza epidemic years.

In the 1918–19 epidemic it has been variously estimated that 25 to 40 per cent of the population had the disease. It would seem that in the epidemic just passed not more than 5 to 10 per cent of the population were infected, the lower figure seeming the more probable.

Prevalence in Certain Cities and Towns.

A few communities in the State had a much larger number of cases than proportionately prevailed throughout the State as a whole. This may have been due to a more complete reporting of the milder cases, or to the fact that for some unexplained reason the disease was more widespread in those communities.

Communities having the Highest Morbidity Rate.

Town.	Cases.	Morbidity Rate (per 100,000).
Cummington,	140	20,000
Becket,	100	10,100
Brookfield,	189	9,920
Littleton,	117	9,530
Alford,	23	8,630
Tisbury,	98	6,720
Sharon,	170	6,440
Marion,	93	6,140
Greenwich,	24	6,000
New Marlborough,	55	5,920
Royalston,	54	5,800
West Newbury,	90	5,670
Topsfield,	56	4,770
Ashburnham,	94	4,680
Amesbury,	291	4,080
Holden,	116	4,020

Of these communities only one, Amesbury, has a population of over 5,000, three of from 2,000 to 3,000, and the remainder of less than 2,000 population.

The larger cities and towns had a rate of less than 1,000 per 100,000.

The following table gives the morbidity statistics for the 1918–19 and 1920 epidemics for comparison: —

The Two Epidemics in Certain Communities.

CITY OR TOWN.	JAN. 1 TO MAR. 31, 1920.		OCT. 1, 1918, TO APR. 30, 1919.	
	Cases.	Morbidity Rate (per 100,000).	Cases.	Morbidity Rate (per 100,000).
Cities over 200,000.				
Boston,	7,904	970	17,884	2,210
Cities 150,000 to 200,000.				
Worcester,	1,485	820	7,539	4,350
Cities 100,000 to 150,000.				
Cambridge,	1,724	1,530	4,174	3,750
Lowell,	1,205	1,100	5,993	5,490
Lynn,	984	960	4,237	4,230
New Bedford,	690	800	10,631	9,030
Springfield,	561	480	7,171	6,410
Fall River,	603	460	7,750	6,040
Cities 50,000 to 100,000.				
Malden,	1,025	1,910	1,837	3,430
Somerville,	1,056	1,080	3,716	4,000
Chelsea,	430	780	1,585	3,150
Haverhill,	335	610	4,508	8,680
Lawrence,	355	370	3,908	4,200
Brockton,	135	350	3,047	4,630
Holyoke,	114	180	3,139	5,000
Cities and Towns 25,000 to 50,000.				
Waltham,	883	2,710	1,779	5,620
Everett,	400	950	1,392	3,440
Pittsfield,	428	900	690	5,170
Newton,	392	840	1,906	4,220
Fitchburg,	320	770	3,546	8,700
Beverly,	172	630	938	3,640
Taunton,	224	590	3,035	8,120
Medford,	223	580	1,148	3,260

The Two Epidemics in Certain Communities — Concluded.

CITY OR TOWN.	JAN. 1 TO MAR. 31, 1920.		OCT. 1, 1918, TO APR. 30, 1919.	
	Cases.	Morbidity Rate (per 100,000).	Cases.	Morbidity Rate (per 100,000).
Cities and Towns 25,000 to 50,000 — Con.				
Brookline,	228	580	1,838	4,950
Quincy,	238	490	1,429	3,120
Revere,	93	290	151	5,100
Salem,	65	150	1,138	2,770
Chicopee,	27	80	681	2,050
Cities and Towns 15,000 to 25,000.				
Arlington,	267	1,420	1,177	6,830
Leominster,	236	1,330	1,319	7,810
Winthrop,	202	1,300	688	4,760
North Adams,	288	1,270	1,415	6,420
Newburyport,	193	1,230	478	3,080
Framingham,	181	960	1,493	8,420
Woburn,	159	910	708	4,130
Peabody,	182	830	1,144	5,580
Methuen,	135	810	508	3,250
Attleboro,	167	800	1,453	7,300
Weymouth,	114	760	309	2,110
Westfield,	155	740	1,793	9,010
Watertown,	116	570	604	3,200
Melrose,	97	540	795	4,510
Northampton,	129	530	1,735	7,530
Gardner,	68	380	1,773	10,170
Southbridge,	59	370	1,319	8,650
Gloucester,	75	310	630	2,570
Marlborough,	17	100	691	4,400

Of the eight cities in the State having a population of over 100,000, Cambridge had the highest rate, with 1,530 and Fall River the lowest, with 460 cases, per 100,000.

Of the 50,000 to 100,000 group, Malden led, with a 1,910 rate, and Holyoke, with 180 cases per 100,000, was the lowest.

Of all the cities, Waltham reported the most cases in proportion to the population, and had a morbidity rate of 2,710 cases per 100,000, and Chicopee was the lowest, with a remarkably low rate of 80 cases per 100,000.

Comparing the incidence of influenza in the communities given, there is apparently no relation between the incidence of the disease in 1918–19 and in 1920. Cities and towns that had a high morbidity rate in the first epidemic in some instances had a low rate this year, and in others, a high rate.

It would seem, therefore, that the amount of immunity that existed when the epidemic began in January was small, and if there was an immunity it had long since become a negligible factor in protecting a community. From this standpoint the decrease in virulence of the pathogenic organism causing the disease may account entirely for the epidemics, rather than a susceptible population.

INCIDENCE OF DISEASE THROUGHOUT THE STATE.

The prevalence of influenza in all the larger centers of population throughout the State was about the same, the rate of 500 to 1,499 cases per 100,000 prevailing.

In the area about Boston, there were in the 500 to 999 rate group Brookline, Newton, Watertown, Chelsea, Medford and Everett; Boston, Somerville, Arlington and Winthrop in the 1,000 to 1,499 group; Malden, Cambridge and Milton in the 1,500 to 1,999 group. Belmont had the high rate of 3,690 cases per 100,000. Quincy and Dedham had the lowest rate in this section of the State, with a rate of 490 and 310, respectively.

In the northeastern part of the State, Georgetown, West Newbury, Newburyport, Amesbury, Groveland and Merrimac formed an area of high incidence, with Newburyport at the lowest extreme, having a rate of 1,230, and West Newbury the worst sufferer, with a rate of 5,670.

Lawrence had 370 cases per 100,000, whereas the neighboring city of Lowell had a rate of 1,100. It will be of interest to know the mortality rate of influenza in these two cities so similarly situated when it is available, for on the surface it would seem that one reported cases more completely than the other. To the west of Lowell, Groton, Westford, Tyngsborough and Littleton formed a focus of high incidence.

Fitchburg, with a rate of 770, had a lower incidence than the communities surrounding it, as did Gardner, with the low rate of 380.

Worcester and surrounding communities had rates in the 500 to 999 group, with the exception of Holden, this community of 2,900 people having a rate of 4,900 cases per 100,000.

West of Worcester the incidence of influenza was much less than in the eastern half of the State, most of the cities and towns, including Springfield, Northampton, Westfield, Pittsfield, Chicopee and Holyoke, having rates of 999 cases per 100,000 or lower. Certain of the smaller towns had very high rates, and these have been given in the table accompanying this article. Cummington, in the Berkshire Hills, reported 140 cases, and had the highest rate of any town in the State, — 2,000 cases per 100,000.

The area south of Boston and Cape Cod, also, had a low incidence, with the exception of the four adjoining towns of Acushnet, with a rate of 2,050; Rochester, 1,290; Mattapoisett, 3,200; and Marion, 6,140.

Off the southern coast Nantucket had a rate of 1,450, and the towns on Martha's Vineyard had the following rates: West Tisbury, 270; Oak Bluffs, 2,140; Edgartown, 3,670; and Tisbury the highest, 6,720.

In general, the large cities had a morbidity rate of 500 to 999, and the highest rates were in the small towns of less than 1,500 population.

CONCLUSIONS.

1. Influenza has been epidemic in Massachusetts during five periods since 1888.
2. The 1920 epidemic was widespread, but a milder infection than the 1918–19 epidemic.
3. The 1920 epidemic lasted a ten-week period.
4. The peak of the 1920 epidemic was reached about sixteen days after the appearance of the disease on February 6 or 7.
5. The immunity, if any, conferred on a population had apparently no effect in preventing the rapid dissemination of the infection.
6. The organism causing the disease was of a lower virulence than the 1918–19 epidemic.
7. In general, adjacent communities had the same incidence of the disease.

BOTULISM.

By Paul F. Orr, Department of Preventive Medicine and Hygiene, Harvard Medical School, Boston.

Historical.

THE earliest reports regarding botulism, or sausage poisoning, were made in the German literature during the middle of the eighteenth century. The frequency with which these cases occurred resulted not only in frequent reference to the subject in the literature, but also official warnings were sent out regarding the danger from eating spoiled sausages, and in some places laws were passed requiring the registration of cases of sausage poisoning. Mayer has summarized the incidence of botulism and food poisoning in Germany during the past one hundred and thirty years. About 1,200 cases have occurred during this period of which about 360 were fatal, giving a mortality rate of 30 per cent. The reports published during the past few years indicate that botulism is still quite frequent in Germany and Austria. Occasional cases have been reported in France, Holland, Denmark and Belgium, but the disease is quite rare in these countries.

According to Savage no authentic cases of botulism have occurred in Great Britain. The recent outbreak of so-called "epidemic botulism" in England is now considered to have been encephalitis, and in no way connected with botulism.

Some recent Russian publications report that in that country "fish poisoning" has been quite prevalent. The striking similarity of these cases to those of botulism is suggestive of the fact that the fish poisoning with which they are dealing is in reality a type of botulism.

The work of Wilbur and Ophuls in 1914 was mainly responsible for bringing botulism to the attention of the medical profession in the United States. Previous to this time only a very few cases had been reported in this country. Since 1914, however, the reports of Dickson, Shippen, Graham, Burke and others have shown that botulism occasionally occurs in the United States, and that it is one of the problems requiring the attention of public health officials. Recently it has been given disproportionate importance compared with major problems, such as tuberculosis, venereal diseases, etc.

ETIOLOGY.

Bacillus botulinus, the causative factor of botulism, was discovered by van Ermengem in 1896, in connection with a food poisoning outbreak at Ellezelles, Belgium. The organism is a large Gram positive, motile rod, which produces spores. It is a strict anaerobe, however, when grown in symbiosis with certain aerobic bacteria it may develop in the presence of air. *B. botulinus* is a strongly proteolytic organism. Protein substances on which it is growing are digested and a strong putrefactive odor is given off. Gas which is usually produced is due to the presence of glucose or other fermentable sugars.

HABITAT.

Until the recent work of Graham and of Burke practically nothing was known regarding the habitat of *B. botulinus.* Graham has encountered this organism in a relatively large number of animal feeds, including ensilage, oat hay, corn fodder and bran. These feeds came mainly from Kentucky and Illinois.

In examining 235 cultures made from samples collected in different parts of California, Burke demonstrated the presence of *B. botulinus* in seven of these. Bruised and moldy cherries, beans, spiders and moldy hay were some of the sources from which *B. botulinus* was isolated. From the work of Graham and Burke, and from the frequency with which recent outbreaks of botulism have occurred, it seems quite probable that *B. botulinus* is widely distributed throughout the United States.

FOODS INFECTED.

Botulism has been generally recognized as resulting from the ingestion of spoiled sausages. In fact, up till the time of the Darmstadt outbreak, in 1904, meat of some sort was considered necessary for the growth of *B. botulinus,* but in this outbreak a vegetable medium (beans) was found to be the origin of the toxin.

I have found that *B. botulinus* grows readily and produces very strong toxin in canned peas, corn, baked beans, string beans, carrots, hominy and asparagus, besides the various meats.

Dickson states that he has obtained growth and toxin production in various fruits in which he had neutralized the acid. However, it is rather doubtful that *B. botulinus* will grow and produce toxin in the different fruits as ordinarily canned on account of this acidity. It is true that a few outbreaks of botulism have occurred in which spoiled fruits were considered to be the cause. However, in each of these cases there was a divergence of opinion as to the food at fault.

Ripe olives have occasionally proven to be a medium for the growth of *B. botulinus*. However, ripe olives, as usually bottled, I have found to be about neutral in reaction, which is favorable for the growth of this organism. Most of the other fruits as ordinarily canned have rather a high acidity, in fact, much greater than what I have found is necessary to prevent the growth of *B. botulinus*. The high acidity of green olives, obtained ordinarily on the market in bottles, makes it appear quite improbable that any cases of botulism will result from the ingestion of these olives. In one instance in this country an outbreak of botulism was traced to the consumption of home-made cottage cheese.

BOTULINUS TOXIN.

B. botulinus produces a very powerful poison. As has been stated, it may develop in many of the common food materials. Instances have been reported in which merely tasting the spoiled food resulted fatally.

The toxin standing at room temperature in the dark deteriorates very slowly. Infected beans I have found to be very potent after standing for more than a year under these conditions. A temperature of 80° C. for from five to ten minutes definitely destroys the toxin. Any food material which has been heated to the boiling point may be considered to be free of toxin. However, it should be kept in mind that this temperature may not destroy all the spores of *B. botulinus* which may be present; hence, if the food material is allowed to stand at room temperature for twenty-four hours or more after heating, more toxin may be produced, and thus the food may again become poisonous.

A brine of 8 per cent or greater has been found to prevent the growth of *B. botulinus*, so food materials which are carefully preserved in a brine containing 8 per cent of salt or more may be considered safe from the standpoint of botulism. From the results which have been obtained it appears that sugar has comparatively little effect in inhibiting the growth of *B. botulinus*. A syrup containing at least 50 per cent of glucose has been found necessary to inhibit growth.

BOTULINUS ANTITOXIN.

Antitoxin has been prepared against botulinus toxin, and if used in time will protect against fatal doses of the toxin. The practical value of this antitoxin is rather limited, due to the fact that by the time the diagnosis of botulism is made the intoxication has proceeded to such an extent that the administration of antitoxin has little if any beneficial value. Like tetanus and diphtheria antitoxin, it must be given early to exert its maximum beneficial effects.

CHANGES PRODUCED IN FOODS.

As a general rule, foods in which *B. botulinus* has developed are distinctly spoiled. There may be only a slightly rancid odor, or it may be distinctly putrefactive. Foods showing evidences of gas formation should be considered unfit for food. *B. botulinus* produces gas in practically all foods in which it grows. As has been stated, this organism is distinctly proteolytic in character, consequently, any food materials in which it develops will tend to become soft and mushy.

Foods having an abnormal odor, showing evidences of gas formation, and which are soft and mushy in character, should be considered dangerous, and under no circumstances be served for consumption. They should be thoroughly cooked and then thrown in the garbage pail. Occasionally foods may contain enough toxin to be dangerous, while at the same time there may be only very slight evidences of spoilage. Tasting of these suspicious foods may be hazardous; instead, they should be boiled for about five minutes, after which even a very slight decomposition of the food can be easily detected by the odor.

PREVENTION OF BOTULISM.

Recent work has shown that the spores of some strains of *B. botulinus* are very resistant to heat, some requiring exposure to a boiling temperature for about four hours before being entirely destroyed.

The usual methods of home canning are inadequate, from the standpoint of both temperature and time of heating, to insure the destruction of the spores of *B. botulinus* in every instance. The safest method is to process foods with steam under pressure so that they are heated to 120° C. for ten minutes or longer, according to the best commercial practice.

The use of fresh, sound fruits, vegetables and other foods, as well as extreme care and cleanliness in the preparation of these foods, will aid greatly in the prevention of botulism. Thorough cooking of foods just before being served is also an important safeguard.

A great deal of valuable information of epidemiological and etiological significance could be obtained if botulism would be made a reportable disease. This has been done by both the States of California and Oregon. Even as early as the beginning of the nineteenth century, sausage poisoning, or botulism, was made a reportable disease in the kingdom of Würtemberg.

BACILLUS COLI AND BACILLUS AEROGENES.

H. W. Clark, Director, Division of Water and Sewage Laboratories, Massachusetts Department of Public Health.

By the usual method of determining *B. coli* in water and sewage the results as recorded include two general groups, namely, *B. coli* proper and *B. aerogenes.* At the present time it is quite confidently believed that the two groups are not of equal sanitary importance, as *B. coli* is undoubtedly of fecal origin, while *B. aerogenes* is not, and hence its significance in water as an index of pollution is doubtful. In the few cases in which it is found in fæces its presence is accidental. Of many coli-like cultures from human fæces tested out at the Lawrence Experiment Station only 1.5 per cent were aerogenes, and of many coli-like cultures from the fæces of various animals 4 per cent proved to be aerogenes. This is in accord with the usual experience of laboratory workers at the present time, hence it is probable that some of our bacterial water analysis records showing positive tests for coli-like organisms are of little significance; that is, many of these positive tests are simply caused by the presence of aerogenes rather than of true *B. coli.*

The so-called methyl red test is commonly used to differentiate between *B. coli* and aerogenes, although even here *B. cloacæ* are included in the positive tests for aerogenes until further differentiation is made. *B. cloacæ* liquefies gelatin, and aerogenes does not. In the methyl red test, so called, the principles of differentiation involved are as follows: The two groups, that is, coli and aerogenes, ferment sugars differently, aerogenes forming more CO_2 and less hydrogen and less acid per molecule of dextrose than true coli. The medium for the test contains dextrose with peptone and dipotassium hydrogen phosphate as buffer agents, so called, and so balanced in the medium that coli produces enough acid to give the methyl red test, while acid production by aerogenes is checked before that amount is reached. The other activities of aerogenes are, however, not retarded, and after a day or so the slight amount of acid formed is decomposed, and the medium becomes much less acid than is the case with the coli culture.

The culture to be tested, grown in medium described above, is divided and a few drops of methyl red indicator added to one portion. The production of a red color in this portion indicates *B. coli* and a yellow color, *B. aerogenes.* An equal volume of 10 per cent potassium hydroxide is added to the other portion, and if *B. aerogenes* is present an eosin pink color develops on standing. This is known as the Voges-Proskauer test.

The "standard method" medium contains .5 per cent each of Witte's peptone, dextrose and dipotassium hydrogen phosphate, but when using this medium a number of coli-like cultures gave positive results with both the methyl red and Voges-Proskauer tests. It was found, however, after some experimenting that increasing the buffer action by adding .6 instead of .5 per cent peptone to the medium made most of these cultures react like normal aerogenes; on the other hand coli cultures reacted acid even when the peptone was increased to 1 per cent. In other words, the "standard method" medium does not contain quite enough buffer agent to prevent some strains of aerogenes from forming sufficient acid to give positive results with methyl red.

Including our results with the published results of seven other observers, only 6 per cent of over 3,100 coli-like cultures isolated from human and animal fæces were aerogenes. Leaving out the results of one of these observers, 1,104 cultures contained only 3 per cent of aerogenes.

Notwithstanding this, of over 50 cultures isolated from sewage, 22 per cent were aerogenes; again, of 81 cultures isolated from the very polluted Merrimack River, 34 per cent were aerogenes; and of 55 cultures from filtered river water, 31 per cent were aerogenes.

One explanation of this increased number of aerogenes in the cultures isolated is that they are washed from the soil; another is that they increase in numbers under the conditions prevailing in sewage, river water, etc., faster than do *B. coli.* Neither of these explanations is wholly satisfactory, and it is perhaps possible that aerogenes is "degenerate" coli; that is, coli that have, when living under adverse conditions, lost some of the functions necessary to give complete tests for this organism.

Various experiments are under way to prove the truth or falsity of this hypothesis. It is believed from good evidence we have accumulated that aerogenes is more hardy than coli, and results of cultures isolated from the effluents from Filters Nos. 4 and 9 at the Lawrence Experiment Station seem to confirm this; that is, of

15 cultures isolated from the effluent from Filter No. 4, 8 were aerogenes, while of 9 isolated from Filter No. 9, only 1 was aerogenes. These filters receive sewage which is a much longer time passing through the fine sand of Filter No. 4 than through the coarser sand of Filter No. 9, and hence it may be true that during this long period the coli reaching the surface of the filter in the sewage applied either die while passing through the filter or become "degenerate" coli; in other words, aerogenes.

Investigations under way in regard to bacterial examinations of different water supplies in the State seem to show, as stated in the beginning, that quite a number of the tests recorded by us as positive coli tests are tests for aerogenes, and studies of the samples and supplies would seem to indicate that such tests isolate organisms not showing recent pollution of a water, but organisms which have for a long time lived in that water.

RECENT LEGISLATION.

Chapter 85.

Resolve relative to the appointment of a commission to investigate the question of prenatal and postnatal aid and care for mothers and their children.

Resolved, That an unpaid special commission is hereby created to consist of the commissioner of public health, the commissioner of public welfare, and three persons to be appointed by the governor, one of whom shall be a physician and one of whom shall be a woman, to investigate the question of participation by the commonwealth and the cities and towns thereof in medical and other prenatal and postnatal aid and care for mothers and their children, including the subject matter of Senate document No. 1, House document No. 306, Senate document No. 200, House document No. 1174, Senate document No. 506 and Senate document No. 572, and among other things the question of the expense involved, the form and nature of the aid, if any, which should be furnished, what the functions and powers of the commonwealth should be, to what extent if at all the cities and towns should participate and whether and to what extent it is advisable that the cities and towns should share in the expense. Said commission shall report its recommendations to the special session of the general court not later than November fifteenth, nineteen hundred and twenty, with drafts of such legislation, if any, as is recommended, with an estimate of the expense of carrying out its recommendations and may expend for the purposes of said investigation and report such sums as the general court shall appropriate. [*Approved June 4, 1920.*

CHAPTER 418.

AN ACT TO REGULATE BAKERIES AND BAKERY PRODUCTS.

Be it enacted, etc., as follows:

SECTION 1. The word bakery is defined, for the purposes of this act, as a building or part of a building wherein is carried on the production, preparation, packing, storing, display or sale of bread, cake, pies or other bakery products, including any separate room or rooms used for the convenience or accommodation of the workers: *provided*, that sections three, four, six, seven and eight shall not apply to retail stores where bakery products are sold, but not produced.

SECTION 2. The standards and requirements hereinafter prescribed shall conform to such rules and regulations as may be adopted by the department of public health, and the provisions of this act and of said rules and regulations shall be enforced by said department and by the boards of health of the several cities and towns, acting under the supervision of said department: *provided*, that the provisions of this act relating to industrial health shall be enforced by the department of labor and industries in accordance with such rules and regulations as it may prescribe.

SECTION 3. Every bakery shall be constructed, drained, lighted, ventilated and maintained in a clean and sanitary condition, and when and where necessary screened against flies, shall have plumbing and drainage facilities together with suitable wash basins, wash sinks and toilets or water closets, which shall be kept in a clean and sanitary condition. The said toilets or water closets shall be in rooms having no direct connection with any room in which bakery products or ingredients are prepared, stored, handled or displayed.

SECTION 4. In connection with every bakery a suitable room or rooms shall be provided for the changing and hanging of the wearing apparel of the workers or employees, which shall be separate and apart from the work, storage and sales rooms, and shall be kept in a clean and sanitary condition.

SECTION 5. No person shall sit, lie or lounge or be permitted to sit, lie or lounge upon any of the tables, shelves, boxes or other equipment or accessories used in connection with the production, preparation, packing, storing, display or sale of bakery products. No animals or fowls shall be kept in or permitted to enter any bakery.

SECTION 6. Before beginning the work of preparing, mixing or handling any ingredients used in the production of bakery products, every person engaged in such work shall wash the hands and arms, and after using toilets or water closets, every person therein engaged shall wash the hands and arms thoroughly and then rinse in clean water; and for this purpose the owner or operator of the bakery shall provide sufficient facilities.

SECTION 7. No owner or operator of a bakery shall require or permit any person affected with any contagious, infectious or other disease or physical ailment which may render such employment detrimental to the public health, or any person who refuses to submit to the examination required in section eight, to work therein.

SECTION 8. The commissioner of public health or the commissioner of health or the chief health officer in the several cities and towns, may require any person intending to work, or working, in a bakery, to submit to thorough examination for the purpose of ascertaining whether he is afflicted with any contagious, infectious or other disease or physical ailment. All such examinations shall be made without charge to the person examined and at the expense of the department or board making the same. Any person so examined may have his physician present at the examination, which may be made by any competent physician duly registered and licensed under the laws of the commonwealth.

Section 9. The floors, walls and ceilings of every bakery, the equipment used in the handling or preparation of bakery products or their ingredients, and the wagons, boxes, baskets and other receptacles in which bakery products are transported, shall be kept by the owner or operator of the bakery or by the distributor of said products in a clean and sanitary condition and at all times free from dirt and dust, flies, insects and other contaminating matter. Shipping baskets and other containers for transporting bakery products shall be kept clean and, whenever the property of a distributor or dealer, shall not be used for the shipment of products to any other person or concern.

Section 10. All show cases, shelves and other places where bakery products are sold shall be kept by the dealer well covered, properly ventilated, adequately protected from dust, flies and other contaminating matter, and shall at all times be maintained in a sweet, clean and wholesome condition.

Section 11. Boxes or other permanent receptacles or containers for the storing, receiving or handling of bakery products shall be so placed and constructed as to be beyond the reach of contamination from streets, alleys and sidewalks, or from animals, and shall be kept by the dealer clean and sanitary. No other articles shall be placed therein along with said products and no person shall tamper with, injure, or contaminate said boxes, receptacles or containers, remove anything therefrom, or place anything therein, other than the baker or dealer or their employees.

Section 12. All bakery products and their ingredients shall be stored, handled, transported, and kept in such manner as to protect them from spoilage, contamination, disease and unwholesomeness. No ingredient, or material, including water, shall be used therein which is spoiled or contaminated or which may render the product unwholesome, unfit for food, or injurious to health.

Section 13. No ingredient shall be used in any bakery product likely to deceive the consumer or which lessens its nutritive value without being plainly labeled, branded or tagged, or having a sign making plain to the purchaser or consumer the actual ingredients: *provided, however*, that in case of unwrapped bread to be sold by the loaf, such labeling, branding or tagging shall be placed upon the same label, as hereinafter provided, which shows the name of the manufacturer and the net weight of the loaf. Said ingredients and the sale or offering for sale of said products shall otherwise comply with the provisions of chapter two hundred and eight of the General Acts of nineteen hundred and seventeen.

Section 14. No bakery products, except as hereinafter provided, shall be returned from any consumer or other purchaser to the dealer or baker, nor from any dealer to the baker, and no baker or dealer shall directly or indirectly accept any returns or make any exchange of bakery products from any dealer, restaurant or hotel keeper, consumer or other person. All such products shall be kept moving to the consumer without unreasonable delay and without any exchange, return or practice whatsoever which may disseminate contamination or disease or inflict fraud upon them, among consumers, or disseminate "rope", so-called, or other infection in bakeries, or which may cause waste in the food supply: *provided*, that this section shall not apply to crackers or other bakery products which are packed at the place of production in cartons, cans, boxes or similar permanent containers, and which are so packed and sealed at such place as fully to insure their freshness and wholesomeness and protect them from contamination, adulteration and deterioration in the course of trade, and which remain in the original unbroken package as packed, except in so far as may be necessary to prevent waste in the food supply; and *provided, further*, that "permanent containers" shall not be construed to include the paper or parchment wrappers used in wrapping loaves of bread.

Section 15. The department of public health may, by rule, establish such exemptions as may be necessary to facilitate the sale of any accumulated or unsold stocks of wholesome bakery products, and in other cases not inconsistent with the purposes of this act.

Section 16. Except as hereinafter otherwise provided, bread shall not be sold or offered or exposed for sale otherwise than by weight, and shall be manufactured for sale and sold only in units of sixteen or twenty-four ounces, or multiples of one pound. When multiple loaves are baked each unit of the loaf shall conform to the weight required by this section. The weights herein specified shall be construed to mean net weights twelve hours after baking, to be determined by the average weight of at least twelve loaves. Such unit weights shall not apply to rolls or fancy bread weighing less than four ounces nor to loaves bearing a plain statement in plain position of the weight of the loaf and the name of the manufacturer thereof. In case of wrapped bread such information shall be stated upon the wrapper of each loaf; and in the case of unwrapped bread shall be stated by means of a pan impression or other mechanical means or shall be stated upon a label not larger than one by one and three quarter inches, and not smaller than one by one and one half inches. Such label affixed to an unwrapped loaf shall not be affixed in any manner or with any gums or pastes which are unsanitary and unwholesome, and there shall not be more than one label on a loaf or a unit.

Section 17. The director of standards shall prescribe such rules and regulations as may be necessary to enforce the preceding section, including reasonable tolerances or variations within which all weights shall be kept: *provided, however*, that such tolerances or variations shall not exceed one ounce per pound under the standard unit or marked weight. The said director, and under his direction the local sealers of weights and measures, shall cause the provisions of this section to be enforced. Before any prosecution is begun under this section the parties concerned shall be notified and given an opportunity to be heard before said director.

SECTION 18. If, after inspection, it is found that a bakery is not constructed, maintained, operated, or the distribution of its products not conducted in accordance with this act, notice in writing shall be given to the owner or manager, stating the delinquency, and fixing a reasonable time within which the same shall be remedied and for a hearing to any party in interest.

SECTION 19. In case a bakery is unfit for the production and handling of food or dangerous to the health of its employees, the department of public health or local board of health may order it closed: *provided*, that any aggrieved person or corporation shall have the right to be heard before said department, or board, as the case may be, and shall also have a right of appeal, before or after the execution of such order, but within thirty days of its issuance, to the superior court.

SECTION 20. Within sixty days after the taking effect of this act, every bakery in the commonwealth shall be registered with the board of health of the city or town in which it is situated. The registration shall show its situation, including street and number, and its ownership. The board shall forthwith report such registration to the department of public health. No fee shall be charged for such registration.

SECTION 21. No new bakery shall be established unless the building plans and equipment proposed to be used have been approved by the board of health of the city or town. Said board shall refuse a permit to such bakery if the building and equipment do not comply with the provisions of this act and the rules and regulations made hereunder: *provided, however*, that any party in interest shall have the right of appeal to the department of public health or to the superior court. Said department or court may affirm, reject or modify the findings of the board, and the said board shall thereupon proceed in accordance with the order of the court or department.

SECTION 22. Violation of any provision of this act, or of any rule or regulation adopted hereunder, shall be punished by a fine of not more than one hundred dollars.

SECTION 23. Sections three to seven, inclusive, of chapter fifty-seven of the Revised Laws, as amended by chapter one hundred and ninety-seven of the acts of nineteen hundred and eight, by chapter one hundred and ninety-one of the acts of nineteen hundred and nine, and by chapter one hundred and fifty-seven of the General Acts of nineteen hundred and sixteen, sections twenty-eight and thirty-one of chapter seventy-five of the Revised Laws, and chapter two hundred and fifty-eight of the General Acts of nineteen hundred and fifteen, are hereby repealed. [*Approved May 6, 1920.*

CHAPTER 435.

AN ACT RELATIVE TO THE NUMBER AND COMPENSATION OF DISTRICT HEALTH OFFICERS OF THE DEPARTMENT OF PUBLIC HEALTH.

Be it enacted, etc., as follows:

Section five of chapter seven hundred and ninety-two of the acts of nineteen hundred and fourteen is hereby amended by inserting after the word "into", in the third line, the words: — not more than, — and by striking out the words "approval of the governor and council, not exceeding thirty-five hundred dollars a year", in the sixth and seventh lines, and substituting the following: — provisions of chapter two hundred and twenty-eight of the General Acts of nineteen hundred and eighteen as amended, — so as to read as follows: — *Section 5.* The commissioner of health, with the approval of the public health council shall, from time to time, divide the state into not more than eight health districts and shall appoint and may remove a district health officer for each district, with the approval of the public health council, at a compensation, subject to the provisions of chapter two hundred and twenty-eight of the General Acts of nineteen hundred and eighteen as amended. The district health officers shall not engage in any other occupation and shall give their entire time to the performance of their duties. The commissioner of health may, from time to time, order two or more of the said district health officers to work in one district in order to study, suppress or prevent disease. Each district health officer shall have all the powers and perform the duties now provided by law for inspectors of health and further shall, under the direction of the commissioner of health, perform such duties as may be prescribed by, and shall act as the representative of the commissioner of health and under his directors shall secure the enforcement within his district of the public health laws and regulations. Said district health officers shall be graduates of an incorporated medical school admitted to practice in the commonwealth, or shall have had at least five years' experience in public health duties and sanitary science. [*Approved May 12, 1920.*

THE COMMONHEALTH.

Monthly Bulletin of the Massachusetts Department of Public Health.

Sent Free to Any Citizen of the State.

Merrill E. Champion, M.D., Director of Division of Hygiene, Editor.
Room 546, State House, Boston, Mass.

Maternity Benefits Commission. — With the close of the legislative session in June provision was made for an unpaid commission to study the question of maternity benefits and to report to the special session of the Legislature to be held in November, 1920. According to the terms of the resolve (chapter 85) "an unpaid special commission is hereby created to consist of the commissioner of public health, the commissioner of public welfare, and three persons to be appointed by the governor, one of whom shall be a physician and one of whom shall be a woman, to investigate the question of participation by the commonwealth and the cities and towns thereof in medical and other prenatal and postnatal aid and care for mothers and their children, including the subject matter of Senate document No. 1, House document No. 306, Senate document No. 200, House document No. 1174, Senate document No. 506 and Senate document No. 572, and among other things the question of the expense involved, the form and nature of the aid, if any, which should be furnished, what the functions and powers of the commonwealth should be, to what extent if at all the cities and towns should participate and whether and to what extent it is advisable that the cities and towns should share in the expense. Said commission shall report its recommendations to the special session of the general court not later than November fifteenth, nineteen hundred and twenty, with drafts of such legislation, if any, as is recommended, with an estimate of the expense of carrying out its recommendations and may expend for the purposes of said investigation and report such sums as the general court shall appropriate."

In addition to Dr. Eugene R. Kelley, Commissioner of Public Health, and Mr. Robert B. Kelso, Commissioner of Public Welfare, ex-officio members, to serve on this Commission the Governor has appointed Dr. Alfred Worcester, president of the Massachusetts

Medical Society, Mrs. Helen MacDonald and Mr. Edward E. Whiting, editor of the "Boston Record." The commission, which is excellently equipped for its task, has entered upon the work with vigor, and is seeking, through statistical study and through conferences with all those interested in the subject, to come to some wise and just conclusion upon this admittedly difficult and involved problem.

Report on Plumbing. — Recognizing the need of a careful study of the plumbing question, the Commissioner of Public Health appointed in September, 1918, a committee to take up the matter of the formulation of uniform State plumbing laws. Prof. George C. Whipple of the Public Health Council served as the committee chairman, the other members being Mr. James C. Coffey of the State Examiners of Plumbers, Mr. Thomas M. Wilson of the New England Association of Plumbing Inspectors, and Mr. E. C. Kelley of the Massachusetts Association of Master Plumbers.

After careful study this committee rendered a report, the publication of which was authorized by the Legislature of 1920. This report will be in print shortly.

A wide discussion of the whole report is hoped for in order that intelligent suggestions may be forthcoming regarding necessary legislation.

Health Councils for Massachusetts and Boston. — It has often been said that Massachusetts as a whole and Boston in particular are full of health agencies of one sort or another, most of them doing good work, but without much regard for co-ordination. This criticism has, to a certain extent, at least, been well founded.

Recently a serious effort has been made to overcome this unfortunate tendency. For the past year there has been maturing a plan for a health league for the city of Boston. The purpose of the league is to improve the health of the community "through better co-operation and co-ordination of the work of existing agencies, and the further development of a health program." Dr. Wm. C. Woodward, Health Commissioner of Boston, has been chosen president of the league.

The Massachusetts Central Health Council, on the other hand, has for its object "the promotion of co-operation among State-wide public health agencies in the interest of the public health." Results will be accomplished, of course, through discussion and mutual agreement. Already the chief agencies engaged directly or indirectly in public health activity have come into this council. The president is Dr. E. H. Bigelow, representing the Massachusetts Medical Society.

Results may confidently be expected from both these forward-looking movements.

The Health-story Hour. — The Division of Hygiene of the Department of Public Health now has ready a health-story hour for children. Geography, history, botany, morals are taught by stories; why should not health and health habits be taught by stories? Several groups of stories, some with lantern slides, have therefore been arranged by Miss Harriet L. Wedgwood, health instructor in the Division of Hygiene, who is prepared to tell health-teaching stories to children upon request to the Division of Hygiene.

In making a request for the health-story hour, kindly specify how large a group of children will probably be in attendance, how old the children are, and whether a lantern is desired.

Agricultural Fairs. — The Department this year anticipates having its child hygiene exhibit on display at as many of the agricultural fairs as possible. These fairs all take place within a limited period, a policy dictated largely by the displays of vegetables and fruits. In view of the fact that the Department of Public Health can furnish only the one exhibit, it can cover only eight or ten fairs at the outside in any one year. For this reason, in order to reach all, a different series of fairs is taken in each year.

Forthcoming Bulletins. — The succeeding two issues of "The Commonhealth" will be devoted to a discussion of special topics. The July–August number will deal with the subject of nutrition; that of September–October, mouth hygiene. Both these phases of hygiene are of fundamental as well as of timely importance.

NEWS ITEMS.

Prof. William T. Sedgwick and Prof. George C. Whipple, whose terms of office had expired, were reappointed recently to the Public Health Council.

Dr. Stanley H. Osborn has resigned as epidemiologist in the Massachusetts Department of Public Health to take the position of director of the Division of Communicable Diseases and deputy commissioner in the Connecticut State Department of Health.

Dr. J. E. Henry has been appointed epidemiologist in the Division of Communicable Diseases of the Massachusetts Department of Public Health.

Miss Emily M. Rogers has resigned as nursing assistant in the Northeastern Health District.

Dr. Milton J. Rosenau has retired from the office of director of the Division of Biologic Laboratories of the Massachusetts Department of Public Health, but will continue with the Department in the capacity of consulting pathologist and bacteriologist.

Dr. Benjamin White has been appointed director of the Division of Biologic Laboratories. Dr. White comes to us from New York, having been until recently assistant director of the Bacteriological Laboratory of the New York City Department of Health, in charge of the Antitoxin Laboratory at Otisville, N. Y.

EASTERN DISTRICT.

Mrs. Bird of East Walpole has established a dental clinic with a dental hygienist to care for the school children of Walpole.

The Bristol County Farm Bureau recently held a very interesting meeting at the home of Mrs. Louis A. Frothingham in North Easton. The program included a talk on the organization and co-operation of the Bureau, clothing, a lecture on preventive dentistry, and a demonstration of mothercraft by two children from the Marshfield school. The school nurse of Marshfield has held mothercraft classes two afternoons a week after school hours during the past school year for girls in the seventh and eighth grades who wished to attend, and fifty girls have availed themselves of the opportunity. The demonstration included the preparation of a milk formula for a small baby, and the proper way to dress and undress a baby. These classes have been so great a success that it is hoped they will be introduced as a regular part of the school work the coming year.

Northeastern District.

At the last meeting of the Stoneham Grange it was voted to start raising funds for a dental clinic.

North Midland District.

The school committee of Belmont has established a dental clinic with a dental hygienist in attendance.

The Middlesex County Farm Bureau is now maintaining two traveling dental clinics, each with a dentist and dental hygienist.

REPORT OF DIVISION OF FOOD AND DRUGS.

During the months of May and June, 1920, samples were collected in 121 cities and towns.

There were 1,815 samples of milk examined, of which 558 were below standard, 17 samples had the cream removed, 4 were skimmed milk below the legal standard, 3 were skimmed milk not properly marked, 131 contained added water, and 2 samples were skimmed milk above the legal standard.

There were 113 samples of food examined, of which 31 were adulterated. These consisted of 2 samples of butter low in fat; 2 samples of clams which contained added water; 5 samples of dried fruits which were wormy; 1 sample of maple sugar which contained mold; and 21 samples of soft drinks which contained saccharine.

There were 4 samples of drugs examined, 1 of which was adulterated. This was a sample of citrate of magnesium which contained sulphate of magnesia.

There were 25 samples of soap chips analyzed for the Department of Public Welfare.

There were 15 hearings held pertaining to violations of the food and drug laws.

The police departments submitted 148 samples of liquor for examination, 116 of which were above 1 per cent in alcohol. The police departments also submitted 25 samples of poisons for examination, 18 of which were morphine, 6 cocaine, and 1 sample was examined for poison with negative results.

There were 31 convictions for violations of the law, $1,475 in fines being imposed.

Joseph Almedia of Westport; George C. Haskell of Orange; Lawson H. and Lewis E. Billings of Plympton; Allan W. Houghton of Amherst; Alexander Charonitch and Samuel Goldstein of Medway; Leon A. Sampson of Westborough; Charles P. May of Winchendon; Frank C. Fousica of Fall River; William H. Palmer of Pittsfield; Manuel Reposa of Somerset; John H. Wiley of Mansfield; Charles Bury of Taunton; John Corbin of Millbury; Joseph Dumas of Dudley; Andrew Haber and Joseph Tatro of South Hadley; and Anton Glass of North Dartmouth were all convicted for violations of the milk laws. Charles Bury of Taunton, Joseph Dumas of Dudley, and Joseph Tatro of South Hadley appealed their cases. Henry A. Pierce of Boston was convicted for violation of the food laws. He appealed his case. Frank Prevoir of Boston was convicted for violation of the cold-storage law. Philip W. Cunningham of Boxborough; Conrad R. Winkler of Adams, on 2 counts; Samuel Friedman, Barney Brodsky, Jacob Rutman, and Ralph W. McIntire, on 2 counts, all of Fitchburg; William P. Powers of Lee; and James Sousini of Pittsfield were all convicted for violations of the slaughtering law. Samuel Friedman and Ralph W. McIntire of Fitchburg appealed their cases.

In accordance with the Acts of 1902, chapter 272, the following is the list of articles of adulterated food collected in original packages from manufacturers, wholesalers or producers: —

Watered milk was obtained as follows: 3 samples produced by Alexander Charonitch and Carpo Yatskow, 11 samples produced by Samuel Goldstein, and 1 sample produced by Frank Cassidy, all of Medway; 13 samples produced by Joseph Almedia of Westport; 7 samples produced by Allan W. Houghton of Amherst; 6 samples produced by John Wiley of Mansfield; 5 samples each, produced by Andrew Haber of South Hadley Center and John Corbin of Auburn; 4 samples produced by Anton Glass of North Dartmouth; 3 samples produced by Leon A. Sampson of Westborough; 2 samples produced by Anna V. Jordan and William Palmer of Pittsfield; 1 sample produced by James Stockton of Caryville; 2 samples produced by Wesley B. Evans of Groveland; and 13 samples produced by Frank Pedros, and 7 samples produced by Frank George, both of Portsmouth, R. I.

Samples of dried fruits which were wormy were obtained as follows: 1 sample each from Segal Brothers and John Zidros of Boston, and Christos & Chiknas Company of Haverhill. One sample of dried fruit which was decomposed was obtained from Edgar P. Lewis of Boston.

One sample of clams which contained added water was obtained from William L. Fowler of Salisbury.

Samples of soft drinks which contained saccharine were obtained as follows: from Haverhill Bottle Works and Bay State Spring Water Company of Haverhill; Star Soda Company of Indian Orchard; P. J. Cray and William Jameson of Holyoke; Cascella Springs Bottling Works of Three Rivers; Star Bottling Company and Standard Bottling Company of Springfield; and Pittsfield Mineral Water Manufacturing Company of Pittsfield.

There were 16 confiscations made, consisting of 30 pounds of decomposed eggs, 45 pounds of decomposed fowl, 140 pounds of decomposed beef, 425 pounds of tuberculous beef, 80 pounds of decomposed lamb, 549 pounds of tainted pork, 100 pounds of decomposed pork livers, 56 pounds of decomposed pork loins, 113 pounds of immature veal, 200 pounds of contaminated squid, and 6,842 pounds of decomposed figs.

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of April, 1920: 2,670,300 dozens of case eggs, 143,693 pounds of broken-out eggs, 673,656 pounds of butter, 450,058 pounds of poultry, 873 pounds of game, 4,750,990 pounds of fresh meat and fresh meat products, and 664,014 pounds of fresh food fish.

There were on hand May 1, 1920, 2,645,250 dozens of case eggs, 294,752 pounds of broken-out eggs, and 270,912 pounds of butter.

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of May, 1920: 10,537,140 dozens of case eggs, 251,692 pounds of broken-out eggs, 691,034 pounds of butter, 1,007,553 pounds of poultry, 994 pounds of game, 7,883,783 pounds of fresh meat and fresh meat products, and 1,120,554 pounds of fresh food fish.

There were on hand June 1, 1920, 12,711,600 dozens of case eggs, 368,413 pounds of broken-out eggs, and 620,747 pounds of butter.

REPORT UPON THE WORK OF THE BACTERIOLOGICAL LABORATORY.

MAY AND JUNE, 1920.

The following gives the number of bacteriological examinations made in the laboratory of the Department of Public Health during the months of May and June, 1920: —

	Number of Examinations.	Diagnosis.		Release.	
		Positive.	Negative.	Positive.	Negative.
Diphtheria,	2,432	214	1,239	346	633

	Number of Examinations.	Positive.	Negative.	* Atypical.
Tuberculosis,	866	193	673	
* Typhoid (Widal test),	244	41	194	9
Typhoid (culture test),	105	4	101	
Malaria,	19	1	18	
Gonorrhea,	435	36	399	
Pneumonia,	43	-	-	
Miscellaneous,	83	-	-	

Total number of examinations made, 4,227.

QUARTERLY REPORT UPON THE DISTRIBUTION OF BIOLOGICAL PRODUCTS AND DIAGNOSTIC OUTFITS.

The following gives the total number of biological products and diagnostic outfits distributed by the Department of Public Health during the three months ending June 30, 1920: —

Biological Products.

Diphtheria antitoxin: —	
12,000 units (for the Boston City Hospital),	306 bottles.
6,000 units (for the Boston City Hospital),	96 bottles.
2,000 units (for the Boston City Hospital),	120 bottles.
12,000 units,	222 bottles.
6,000 units,	997 bottles.
3,000 units,	8,160 bottles.
1,000 units,	1,367 bottles.
Smallpox vaccine: —	
Capillary tubes,	35,721
Bulk,	3,650 cubic centimeters.
Typhoid vaccine: —	
Bulk,	225 cubic centimeters.
Typhoid-paratyphoid vaccine: —	
Ampoules,	4,593
Bulk,	5,150 cubic centimeters.
Antimeningococcic serum,	808 bottles.
Silver nitrate solution,	12,816 ampoules.

Diagnostic Outfits.

Diphtheria culture outfits,	4,182
Tuberculosis sputum outfits,	1,745
Pneumonia outfits,	78
Widal outfits,	371
Typhoid culture outfits,	209
Malaria-Gonorrhea outfits,	493

REPORT OF THE SUBDIVISION OF VENEREAL DISEASES.

MAY, 1920.

Number of ampoules of arsphenamine distributed,	1,900
Number of cases of gonorrhea and syphilis reported by number,	869
Number of smears for gonorrhea examined,	207
Number of examination fixation tests made of G. C.,	174
Number of Wassermann fixation tests made,	2,853

STATISTICAL REPORT OF CASES REPORTED BY NAME.

Cases active May 1: —	
Gonorrhea,	86
Syphilis,	11
Total,	97

Cases reported by name during month,			111

Reported to Local Board of Health: —

	Gonorrhea.	Syphilis.	Both.
New,	82	18	–
Reported second time,	6	1	1
Transferred,	3	–	–
	91	19	1

Total, 111.

Cases closed during month: —

Gonorrhea,	77
Syphilis,	7
Total,	84

Cases active June 1: —

Gonorrhea,	100
Syphilis,	23
Both,	1
Total,	124

Analysis of 84 Closed Cases reported by Name, classified by Disposition made.

Replaced under treatment: —	
G. C. Barnstable 1, Brookline 1, Chelsea 2, Chicopee 1, Everett 2, New Bedford 1, Randolph 1, Southbridge 1, Springfield 2, Boston 10,	22
S. P. Worcester 1, Boston 2,	3
Failed to return to treatment: —	
Unable to locate: —	
G. C. Brockton 1, Chelsea 1, Lawrence 1, Malden 1, Watertown 1, Boston 11,	16
Removal from city: —	
G. C. Cambridge 2, Chelsea 1, Fall River 2, Westminster 1, Boston 8,	14
S. P. Boston 1,	1
No longer infectious: —	
S. P. Boston 1,	1
No treatment needed: —	
G. C. Malden 1, Winchester 1,	2
No adequate report received: —	
G. C. Beverly 1, Lowell 6, Monson 1, Revere 2, Stoneham 1, West Springfield 1, Worcester 2, Boston 9,	23
S. P. Chicopee 1, Lowell 1,	2
Total,	84

Old case reported by Boston Board of Health during May as replaced under treatment: —

Gonorrhea,	1

Analysis of 84 Closed Cases reported by Name, classified by Referring Agency.

Transferred to another board of health,	3	
		3
Boston Dispensary: —		
Returned to treatment,	10	
Unable to locate,	14	
No adequate report received,	4	
		28
Massachusetts General Hospital: —		
Returned to treatment,	7	
Unable to locate,	5	
No treatment needed,	2	
No adequate report received,	2	
		16
Boston City Hospital: —		
Unable to locate,	1	
No adequate report received,	1	
		2
Peter Bent Brigham Hospital: —		
Returned to treatment,	1	
		1
Massachusetts Homeopathic Hospital: —		
No treatment needed,	1	
		1
Springfield clinic: —		
Returned to treatment,	1	
No adequate report received,	3	
		4
Lowell clinic: —		
No adequate report received,	7	
		7
Fall River clinic: —		
Unable to locate,	1	
		1
Worcester City Hospital: —		
Returned to treatment,	1	
No adequate report received,	1	
		2

Private physicians: —

Returned to treatment,	5	
Unable to locate,	7	
No adequate report received,	7	
		19
Total,		84

June, 1920.

Number of ampoules of arsphenamine distributed,	1,596
Number of cases of gonorrhea and syphilis reported by number,	895
Number of smears for gonorrhea examined,	223
Number of examination fixation tests made of G. C.,	176
Number of Wassermann fixation tests made,	3,110

Statistical Report of Cases reported by Name

Cases active June 1: —

Gonorrhea,	100
Syphilis,	23
Both,	1
Total,	124

Cases reported by name during month, ... 123

A. Reported to local board of health: —

	Gonorrhea.	Syphilis.	Both.	Unknown.
New,	76	27	3	3
Reported second time,	11	1	1	–
Transferred,	1	–	–	–
	88	28	4	3

Total, 123.

B. Not reported to local board of health, as believed to be non-infectious (not included in statistics of active cases): —

	Gonorrhea.	Syphilis.	Both.
New,	7	12	2

Total, 21.

Cases closed during month: —

Gonorrhea,	77
Syphilis,	24
Both,	3
Unknown,	1
Total,	105

Cases active July 1: —

Gonorrhea,	111
Syphilis,	27
Both,	2
Unknown,	2
Total,	142

Analysis of 105 Closed Cases reported by Name, classified by Disposition made.

Replaced under treatment: —	
G. C. Boston 6, Brookline 1, Chelsea 5, Fall River 3, Lynn 1, Nahant 1, Salem 2, Somerville 2, Springfield 6,	27
S. P. Attleboro 1, Boston 4, Cambridge 1, Fall River 2, Malden 1, Springfield 3, Westfield 1,	13
Both. Boston 1, Lawrence 1,	2
Unknown. Lynn 1,	1
Failed to return to treatment: —	
Unable to locate: —	
G. C. Beverly 1, Boston 8, Cambridge 2, Fall River 1, New Bedford 1,	13
S. P. Braintree 1, New Bedford 2,	3
Removal from city: —	
G. C. Boston 6, Brookline 1, Cambridge 2, Chelsea 3, Springfield 1,	13
S. P. Boston 1, Springfield 1,	2
Both. Springfield 1,	1
Transferred to active cases: —	
G. C. Somerville 1,	1
No treatment needed: —	
G. C. Cambridge 1, Chelsea 1, Framingham 1, New Bedford 1,	4
No adequate report received: —	
G. C. Boston 14, Cambridge 1, Haverhill 1, Medford 1, Waltham 2,	19
S. P. Boston 2, Milton 1, Newburyport 1, Sudbury 1, Worcester 1,	6
Total,	105

Old case reported by Boston Board of Health during June as replaced under treatment: —

Gonorrhea,	1

Analysis of 105 Closed Cases reported by Name, classified by Referring Agency.

Transferred to another board of health: —

Gonorrhea,	1	
	—	1

Boston Dispensary: —		
Returned to treatment,	9	
Unable to locate,	9	
No treatment needed,	1	
No adequate report received,	9	
	——	28
Massachusetts General Hospital: —		
Returned to treatment,	7	
Unable to locate,	8	
No treatment needed,	2	
No adequate report received,	2	
	——	19
Boston City Hospital: —		
Returned to treatment,	1	
Unable to locate,	4	
No adequate report received,	4	
	——	9
Peter Bent Brigham Hospital: —		
Returned to treatment,	4	
Unable to locate,	1	
	——	5
Worcester City Hospital: —		
Returned to treatment	2	
No adequate report received,	1	
	——	3
Springfield clinic: —		
Returned to treatment,	9	
Unable to locate,	3	
	——	12
New Bedford Board of Health clinic: —		
Unable to locate,	2	
	——	2
Fall River clinic: —		
Returned to treatment,	5	
	——	5
Lynn Hospital: —		
No adequate report received,	1	
	——	1
Huntington Hospital: —		
No adequate report received,	1	
	——	1
Salem Hospital: —		
No adequate report received,	1	
	——	1

Private physicians: —		
Returned to treatment,	6	
Unable to locate,	5	
No adequate report received,	6	
No longer needs treatment,	1	
		18
Total,		105

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

Commissioner of Public Health, Eugene R. Kelley, M.D.

Public Health Council.

Eugene R. Kelley, M.D., *Chairman.*

Wm. T. Sedgwick, Ph.D.
George C. Whipple, S.B.
David L. Edsall, M.D.
Joseph E. Lamoureux, M.D.
Sylvester Ryan, M.D.
Warren C. Jewett.

Division of Administration,	—— ——
Division of Sanitary Engineering,	Director and Chief Engineer, X. H. Goodnough, C.E.
Division of Communicable Diseases,	Director, Bernard W. Carey, M.D.
Division of Water and Sewage Laboratories,	Director and Chemist, H. W. Clark.
Division of Biologic Laboratories,	Director and Pathologist, Benjamin White, Ph.D.
Division of Food and Drugs,	Director and Analyst, Hermann C. Lythgoe, S.B.
Division of Hygiene,	Director, Merrill E. Champion, M.D.
Division of Tuberculosis,	Director, William J. Gallivan, M.D.

State District Health Officers.

The Southeastern District,	Charles W. Milliken, M.D., Barnstable.
The Eastern District,	George T. O'Donnell, M.D., Boston.
The Northeastern District,	Lyman A. Jones, M.D., Swampscott.
The North Midland District,	Charles E. Simpson, M.D., Lowell.
The South Midland District,	Francis A. Finnegan, M.D., Worcester.
The Wachusett District,	Oscar A. Dudley, M.D., Fitchburg.[1]
The Connecticut Valley District,	Bertrand E. Roberts, M.D., Springfield.
The Berkshire District,	—— ——

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[1] Acting.

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MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

EUGENE R. KELLEY, M.D., Commissioner

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THE DEVELOPMENT OF NUTRITION ACTIVITIES BY THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

BY EUGENE R. KELLEY, M.D., COMMISSIONER OF PUBLIC HEALTH.

SHORTLY after the organization of the present Department, Commissioner McLaughlin began to give much thought and planning to the development of nutritional work. At first it was anticipated that such work would normally develop as a function of the Division of Food and Drugs. Further study and actual experience showed that the long experience and nationally recognized standing of that important division had been focused so completely upon the laboratory and field work incidental to fixing of standards and law enforcement that a purely educational function pertaining to food did not fit in well with the other activities of the division.

The newly organized Division of Hygiene, engaged pre-eminently in health education and child hygiene, proved to be the logical instrument for developing a State-wide nutrition campaign.

In October, 1917, a properly qualified nutrition expert was secured in the person of Mrs. Alzira Wentworth Sandwall, a graduate of the Home Economics Department of Simmons College, who had achieved a marked success as an instructor in foods and nutrition methods.

From this date to the present, nutrition has become increasingly prominent in the Department's work. The constant handicap has been inadequacy of funds in proportion to the potential scope of the problem.

It has seemed best to concentrate largely upon printed material and to endeavor to secure a discriminating circulation for this material. The following pamphlets have been written and circulated: —

Food, What it is and What it Does.
Food and the Calorie.
Carbohydrate Foods.
Tissue-Forming Foods.
Fats and Their Value in the Diet.
Simple Facts About Digestion.
Food for the Child.
How Cooking Affects the Digestibility of Food.
The Value of Minerals in the Diet.
The School Lunch.
Food Rules for School Children.
Diet Cards, 1, 2 and 3.

Perhaps the next most prominent feature of the work has been lectures, a compact practical food exhibit, and a set of posters entitled "From Morning till Night with Little Miss Wise," emphasizing the right food for the child and bringing out also other health habits. A set of lantern slides was completed entitled "The Food Way to Health." These slides were planned primarily for children, but have been used successfully for adult audiences and have become very popular. During the fall and winter seasons the Health Instructor in Foods has devoted nearly all of her time to educational work along the line of food and its relation to health.

During the past year increasing attention has been given to the following problems: —

1. Survey of food and nutrition activities of the entire State, including both public and private agencies.
2. Especial attention to enlisting the co-operation of both parents and educational authorities in promoting nutrition of school children.
3. Correlation of all organizations interested in nutrition problems by the formulation of a Departmental Advisory Nutrition Committee. At present the following organizations are represented on this committee: —

State Department of Education.
Simmons College.
Massachusetts Agricultural College.
American Red Cross.
National Civic Federation.
Parent-Teacher Association.
State Federation of Women's Clubs.
Federated Jewish Charities.
League of Catholic Women.
Massachusetts Tuberculosis League.
Instructive District Nursing Association.
Pediatricians.
Boards of health.

This Department was one of the first State departments of health to endeavor to develop, in a systematic fashion, nutrition activities. All over the country now State and city health departments are expanding their activities in this field. So far the surface has been barely scratched. Each year there is better agreement as to the fundamental importance of nutrition in such problems as tuberculosis, infection and dental hygiene, for instance, aside from its immediate importance in assuring a proper bodily development.

It is the purpose of the Department to place greater and greater emphasis upon this tremendously important field of public health. There is scarcely any phase of health activities where greater return can be anticipated from relatively small investment of funds in workers and material.

A NUTRITIONAL PROGRAM FOR MASSACHUSETTS.

By Merrill Champion, M.D., C.P.H., Director, Division of Hygiene, Massachusetts Department of Public Health.

MUCH thought has been given the subject of a nutritional program for Massachusetts. Various phases of such a program occur at once to any one familiar with the subject. Yet it would seem as if it had not been sufficiently obvious to every one that the really fundamental reason for any nutritional program at all is the possibility of raising the level of the public health. We may start with the premise that the problem of nutrition is first and foremost one of public health.

That there are other angles is undeniable. The difficulties of production loom large, especially in the matter of the milk supply. The high cost of living is more than merely a subject ready to the hand for the facile pencil of the cartoonist or the paragrapher. Yet the essential factor is that men, women and children must eat to live, and must eat the right food to be healthy.

Granting, then, that the problem of nutrition is a health problem, it becomes necessary that nutritional work be properly co-ordinated with the other phases of public health work. We must know its relationship to our tuberculosis problem, to dental defects, to the growth of the child, to the health of the parent, of the adolescent, of the industrial worker.

It is beginning to appear now that of all the factors entering into the complex of public health, nutrition is the one which, in some ways, is the most important. We know that within certain limits the prospective mother and the unborn child are dependent for well-being upon the mother's diet. The new-born baby is, to the greatest possible extent, dependent upon its food. The most important angle of preventive work for the preschool child is in the direction of the nutrition clinic, and to a greater or less extent the same is true for other age periods.

Glancing for a moment at the history of the development of nutritional work we find that the food problem has always been considered largely one of economics. Furthermore, the nutrition worker was a teacher of cookery. A few discerning folks recognized that biscuits could be, on occasion, more deadly than bullets; but mostly, cooking was considered an accomplishment of the nature of tatting or trimming hats, and was rated accordingly. The cooking teacher was narrowly trained and was lightly esteemed.

There now succeeds the era of the scientific study of food in its relationship to health. The cooking teacher gives way to the exponent of food values. The future nutritionist will be a woman or man familiar with the chemistry of foods and the physiology of the human body; with the cost of foods, and, to a certain extent, with the making of family budgets; and, furthermore, he or she will, of necessity, be in touch in a general way with most of the other problems of public health.

If the foregoing premises are correct, it will readily be seen that we shall need to develop (*a*) personnel and (*b*) procedures.

Personnel.— It seems safe to assert that for a long time expert nutritionists are going to be scarce,— scarcer, even, than other types of public health workers. This means that all public health workers must become more or less familiar with the simpler fundamentals of nutrition in order to be able to give to the general public the facts it must know at once regarding this aspect of the public health. The expert worker in this field must be responsible for the instruction of the general worker, and must serve as adviser in the more complicated problems. These expert workers will, of necessity, be concentrated at first in State departments of health, health departments in the larger municipalities, and in organizations like the Dietetic Bureau. There is a great opportunity for private agencies to maintain such workers who can carry out demonstrations which will serve to awaken public appreciation of the existing need. Gradually the smaller municipalities will grasp their opportunity and introduce this work as they have already introduced public health nursing. The way in Massachusetts has been paved for this by the enactment of chapter 100 of the Acts of 1920, which provides that cities and towns may maintain dental, medical or health clinics under the supervision of the board of health, with the further provision that towns may combine to carry out the purposes of this act.

We clearly cannot depend entirely upon expert nutritionists for our supply of teachers of nutrition in its relationship to health. However, the ordinary teacher in the small town or country school can do her bit; so can the public health nurse. A teacher in the town of Middleborough, becoming interested in the health of her school children, succeeded in getting a set of scales donated to her room. Then they had a "weighing and measuring party" to which the parents of the children were invited. Subsequent developments included a monthly record of weight and the furnishing of a milk ration to the children. In Falmouth a visit to a small country school, attended largely by the children of adopted citizens, demonstrated to the writer that a serious attempt could be made to improve the nutrition of school children at a minimum expense within the reach of the smallest community. In this same town the district nurses supervise the nutrition of the school children through the use of scales carried from school to school in the car they use to make their nursing visits, — a noteworthy demonstration of what can be accomplished by interest and intelligence.

Procedures.— As in all forms of public health work the returns from efforts directed towards improving nutrition are in proportion to the extent of these efforts. A little money and a reasonable amount of energy will produce appreciable results; more money and more effort will bring greater results still. Certain procedures can be recommended as useful. In the first place, a sustained attempt should be made through lectures, moving pictures, charts, and so forth, to increase the knowledge of the whole population regarding the all-important part which food plays in the maintenance of the health of children and adults alike. This work can best be done by State health departments, county or municipal health departments, home demonstration groups, and by the larger semi-private organizations, like the Red Cross. When a community begins to show interest, the next step is to discover the extent of its problem. This may be done most easily through the schools. Where careful physical examinations are not available, a rough and ready test is furnished by weighing and measuring the children. This does not, however, by any means take the place of a careful medical examination of each child at sufficiently frequent intervals.

The need having been discovered, measures of relief may be put into practice. The school lunch belongs in this category. Clinics where defects may be remedied and preventive work done are essential,— dental clinics, nose and throat clinics, and so forth. A consultation service for the child of preschool age helps solve a large fraction of the problem.

The goal to be reached, however, may best be typified by the health center. A health center is a place where people may come to learn how to keep well. A real health center cannot fail to place nutrition work in the front rank of its activities. Here there should be the expert nutritionist skilled in every branch of the work, who can advise with all the assistants in the campaign, and help them with the nutritional problems met with in the field. This multiplies the value of such a worker many times. The nutrition clinic can be held at the health center, as can the dental clinic, the posture clinic, the well-baby clinic and the clinic for adults. The health education work of the community should radiate from such a center, which should preferably be under the auspices of the municipal board of health.

Lastly, assisting, advising, co-ordinating should be the health department of the State. Food in its relationship to the health of all the people must more and more be brought into the public health program of any State. The official health department should be able to keep in touch with all the work done in the different cities and towns. It should be in a position to advise those wishing to initiate health work, to the end that duplication of effect be avoided, and to the end that the most urgent job be done first. The State health department can also aid the teaching institutions in establishing and maintaining standards. The Department of Health of Massachusetts has endeavored to further the ideas already outlined through the creation of an advisory committee to which reference is made in the article by the Commissioner of Public Health.

To summarize these suggestions for a program in serial order we may say that we should have —

1. Educational work on the part of State and local authorities — both public and private — preceding and accompanying the later steps in the program; also research work on the part of properly qualified nutritionists to add to our knowledge of what to do.
2. Properly qualified workers to aid in the establishment of new undertakings and to advise those in the field.
3. Training of public health nurses, school teachers, social workers, etc., in the elements of nutrition in order that in their daily work they may aid in the educational campaign and carry out the less highly specialized details.
4. Careful physical examination of all school and preschool children to discover faulty nutrition; a set of scales in every school; school lunches and other extra feeding for the undernourished; open-air classes.
5. A health center for a single community or group of communities; the nutrition clinic to be part of this.

NUTRITION ACTIVITIES IN MASSACHUSETTS AS SHOWN BY A RECENT INVESTIGATION.

By Alzira Wentworth Sandwall, S.B., Health Instructor in Foods, Massachusetts Department of Public Health.

During the past year the writer has been making an investigation of the nutrition activities in Massachusetts. Questionnaires have been sent to every city and town, to the boards of health, superintendents of schools, parent-teacher associations, district nurse associations, women's clubs, and to other organizations and individuals actively interested in civic affairs, asking for information regarding school lunches, nutrition clinics and classes, domestic science and extension classes.

Since, of necessity, the investigation has been conducted largely through the medium of correspondence and several incomplete replies received, and since there has been opportunity for only a few personal interviews, the data are far from exhausted.

So far as school lunches are concerned, it is gratifying to know that the cities and towns listed below are developing this phase of the nutrition work.

Cities and Towns reporting School Lunches.

Abington.
Adams.
Amesbury.
Amherst.
Andover.
Arlington.
Ashfield.
Attleboro.
Auburn.
Ayer.
Barnstable.
Barre.
Bedford.
Bellingham.
Belmont.
Billerica.
Blackstone.
Bolton.
Boston.
Braintree.
Bridgewater.
Brockton.
Brookline.
Buckland.
Cambridge.
Canton.
Chelsea.
Chicopee.
Cohasset.
Colrain.
Concord.
Cummington.
Dalton.
Deerfield.
Dennis.
Douglas.
Dover.
Duxbury.
East Bridgewater.
Eastham.
Easton.
Erving.
Everett.
Fall River.
Falmouth.
Fitchburg.
Florida.
Foxborough.
Framingham.
Franklin.
Gardner.
Gloucester.
Goshen.
Grafton.
Great Barrington.
Groton.
Halifax.

Hamilton.
Harwich.
Hatfield.
Haverhill.
Hingham.
Hinsdale.
Holden.
Holliston.
Holyoke.
Hull.
Huntington.
Kingston.
Lancaster.
Lawrence.
Leominster.
Leverett.
Lexington.
Lincoln.
Lowell.
Ludlow.
Lunenburg.
Lynn.
Lynnfield.
Mansfield.
Marblehead.
Marion.
Medford.
Melrose.
Middleborough.
Milton.
Mount Washington.
Natick.
Needham.
New Bedford.
New Marlborough.
Newburyport.
Newton.
North Abington.
North Attleborough.
North Easton.
Northampton.
Northborough.
Northfield.
Norwell.
Norwood.
Oakham.
Orange.
Orleans.
Peabody.
Pepperell.
Pittsfield.
Plainfield.
Plymouth.
Princeton.
Quincy.
Randolph.
Reading.
Rehoboth.
Revere.
Richmond.
Rockland.
Russell.
Salem.
Saugus.
Scituate.
Sharon.
Sheffield.
Shelburne.
Shrewsbury.
Shutesbury.
Somerville.
South Hadley.
Southwick.
Springfield.
Stockbridge.
Stoneham.
Sturbridge.
Sunderland.
Swampscott.
Swansea.
Taunton.
Templeton.
Tolland.
Topsfield.
Wakefield.
Walpole.
Warren.
Watertown.
Wayland.
Wellesley.
Wellington.
West Boylston.
West Bridgewater.
West Newbury.
West Springfield.
West Stockbridge.
Westborough.
Westfield.
Westford.
Weston.
Westwood.
Weymouth.
Whately.
Williamsburg.
Winchester.
Winthrop.
Worcester.

These places vary in the extent to which they have adopted the school lunch idea. Some have a well-organized lunch of the best type in every school where there are children remaining at noon, while others are just recognizing its importance, and a teacher, school nurse, public-spirited citizen, the parent-teacher association or some other group is trying, by tentative experiments, to prove the necessity and value of the school lunch to the community as a whole.

Is your city or town on this list? If not, are there children in any school in your community remaining at noon to eat a cold lunch? If so, why?

Perhaps you are resting content in the knowledge that there are school lunches in your community. Are you sure that the children are having the right food, or are you willing that the school luncheon should be merely a financial success at the expense, perhaps, of proper nourishment for the children?

The simple school lunch is often the beginning of a larger phase of nutrition work. In the town of Russell in which there are 4 schools and 250 children, the school lunch of previous years has been developed so that the town now has the services of a dietitian for one day each week to help in planning the warm lunches and to do educational work with the children and their parents. Scales have been bought for the town, and every child of school age has been weighed and measured. It has been found that only 9.2 per cent of the total number are 10 per cent or more under weight. It is felt that this small number is due to the fact that warm lunches have been served in these schools for several years.

The mid-morning luncheon is also growing more and more popular as its real worth is demonstrated. It is now a part of the program of many schools, and in nearly all instances where it has been adopted, the teachers have reported that the children have not only shown a greater mental reaction, but the classroom conduct is better. The introduction of the school luncheon, either mid-morning, mid-day or mid-afternoon, offers an opportunity for educational work in nutrition, and is often the means of placing in the schools the scales which should be a part of the equipment of every school. The mid-morning luncheon generally consists of a half-pint bottle of milk which is taken through a straw, or a cup of cocoa with a cracker. In Boston, however, the luncheon consists of a cup of stew provided by the Food Economy Kitchen of the National Civic Federation. (A report of this appears in this bulletin.)

Cities and towns reporting the mid-morning luncheon are listed below. I am sure, however, that there are many others.

Bedford.
Boston.
Brockton.
Cambridge.
Chelsea.
Everett.
Fitchburg.
Gloucester.
Grafton.
Lawrence.
Lynn.
Malden.
Middleborough.
New Bedford.
Newton.
Quincy.
Randolph.
Watertown.
Wayland.
Winchester.

The value of the hot noon luncheon and the mid-morning luncheon is being recognized in industry, and is being introduced in many factories.

Sixteen cities and towns report nutrition clinics or classes. They are conducted under various organizations and are growing in popularity, for their value is soon proven by the results.

Cities and Towns reporting Nutrition Classes or Clinics.

Beverly.
Boston.
Brookline.
Cambridge.
Chicopee.
Fitchburg.
Holyoke.
Medford.
New Bedford.
Newton.
Somerville.
Springfield.
Walpole.
Waltham.
West Springfield.
Winchester.

The following cities and towns report domestic science classes in their schools. It is doubtless true that there are other cities and towns offering this course, since the returns are not complete.

Cities and Towns reporting Domestic Science Courses in the Schools.

Abington.
Adams.
Amesbury.
Amherst.
Arlington.
Attleboro.
Ayer.
Barnstable.
Barre.
Belmont.
Beverly.
Billerica.
Boston.
Braintree.
Bridgewater.
Brockton.
Brookline.
Buckland.
Cambridge.
Canton.
Chelsea.
Chicopee.
Clinton.
Cohasset.
Colrain.
Concord.
Dalton.
Danvers.
Dartmouth.
Deerfield.
Dennis.
Douglas.
Dover.
Dudley.
East Bridgewater.
Easthampton.
Easton.
Everett.
Fall River.
Falmouth.
Fitchburg.
Framingham.
Franklin.
Gardner.
Gloucester.
Grafton.
Great Barrington.
Greenfield.
Groton.
Hamilton.
Haverhill.
Hingham.
Holden.
Holliston.
Holyoke.
Hudson.
Ipswich.
Lancaster.
Lawrence.
Lenox.
Leominster.
Lincoln.
Lowell.
Ludlow.
Lynn.
Mansfield.
Marblehead.
Marlborough.
Medford.
Methuen.
Milford.
Milton.
Natick.
New Bedford.
Newburyport.
Newton.
North Adams.
North Andover.
North Attleborough.
Northampton.
Northbridge.

Northfield.
Norwell.
Oak Bluffs.
Orange.
Orleans.
Pepperell.
Pittsfield.
Plainfield.
Plymouth.
Princeton.
Quincy.
Reading.
Revere.
Rockland.
Salem.
Sandwich.
Saugus.
Shelburne.
Sherborn.
Shrewsbury.
Somerset.
Somerville.
Southborough.
Southbridge.
Springfield.
Stockbridge.
Sturbridge.
Sunderland.
Swampscott.
Taunton.
Wakefield.
Walpole.
Watertown.
Webster.
Wellesley.
West Boylston.
West Newbury.
West Springfield.
Westford.
Weston.
Weymouth.
Whitman.
Wilmington.
Winchendon.
Winchester.
Winthrop.
Worcester.
Yarmouth.

Extension classes in food and nutrition are reported by 31 cities and towns. In many instances these courses have taken the form of supper classes for girls and young women, and have been especially valuable in communities where domestic science is not offered in the schools.

Cities and Towns reporting Extension Classes in Food and Nutrition.

Amherst.
Arlington.
Barnstable.
Beverly.
Boston.
Brimfield.
Brockton.
Brookline.
Chicopee.
Clinton.
East Longmeadow.
Everett.
Fall River.
Falmouth.
Fitchburg.
Hampden.
Holyoke.
Manchester.
Mansfield.
New Bedford.
Palmer.
Peabody.
Pittsfield.
Plymouth.
Quincy.
Southbridge.
Springfield.
Wales.
Westfield.
Westford.
Wilbraham.

There is, without doubt, a growing acknowledgment of the close relation of proper nutrition to health. People are fast growing to appreciate that nutrition is not a fad, and means more than knowing how to cook well. In addition to the home demonstration agents, who have long since proved their worth in the counties, Boston, Brockton, Springfield, West Springfield and Westfield have already appointed women specially trained in home economics and nutrition to develop the nutrition work in its various phases in their communities, and other cities are seriously considering such appointments.

In Boston we have the Dietetic Bureau, established as a central organization to help any agency in the community to solve the food problems in the families with which they come in contact. During the past year 60 Boston agencies came or wrote to the Bureau for assistance, and 6,000 sheets of printed material were distributed.

Other organizations in Boston doing special nutrition work are the Baby Hygiene Association, with a dietitian in each of the Baby Welfare Stations to work with the children from two to six; the Boston Dispensary Food Clinic, under the direction of Miss Bertha Wood, where five groups meet weekly to study foods; the Federated Jewish Charities of Boston, which has established a dietetic bureau to extend the services of its social workers wherever dietetic or health problems exist in families; and the New England Dairy and Food Council, which has reached thousands of people with lectures, literature and exhibits.

Last spring Miss Dorothy Curtis was appointed as nutrition worker for Springfield. Her work is with children of the preschool age and with their mothers. She is working under the auspices of the Hampden County Improvement League and the Red Cross.

Miss Gladys Emerson, with the Hampden County Improvement League, is doing educational work on the wider use of milk.

In West Springfield there is a dietitian working full time giving attention to the nutrition problems of the town.

In Chicopee, a dietitian, Miss Bernice Hill, is busy developing the warm lunch in the schools.

In Fitchburg, Mrs. Wright, home demonstration agent, besides helping in any way the agencies or individuals in the city with their nutrition problems, conducts classes for undernourished children.

A report is given in this bulletin of the splendid work of the Food Center in Brookline. As far as I know, it is the only center of the kind under the auspices of a board of health.

In Brockton, Miss Mildred Newell is working in the schools, as special nutrition worker of the Red Cross.

The Anti-Tuberculosis League of Taunton, with Miss Amy L. White in charge, is doing nutrition work among the school children.

The rapid development of nutrition activities throughout the country is indicative of the fundamental importance of proper nutrition in conserving the health of the people, and of the need of getting to the entire people the appreciation of the close relation of food to health.

NUTRITION WORK IN THE SCHOOLS OF NEW YORK STATE.

By Mary G. McCormick, M.S., Supervisor, Nutrition of School Children, State Department of Education, Albany, N. Y.

NEW York State was the first State to create in its State Department of Education the position of Supervisor of the Nutrition of School Children. This position was created in 1918, and carried with it no mandatory powers. The development of the work, therefore, had to be purely persuasive.

First of all, it was necessary to adopt some standard by which malnutrition could be detected. It was necessary that this standard be a simple one, and that it be capable of general application for all school children. The former diagnoses of malnutrition were faulty because of the absence of a recognized standard; whether or not a child was called undernourished depended on the attitude of the person making the examination. We accepted the height, age, weight standard, and any child whose actual weight is found to be 10 per cent or more below the normal weight is called an undernourished child. This standard is the one also in use in the Federal Bureau of Education. While this standard is not an ideal one, its simplicity and its practicability make it an extremely useful one.

Obviously scales in the schoolhouse aid materially in detecting the malnutrition. A letter signed by the deputy commissioner of education was sent to each city, village and district superintendent of schools, recommending that every schoolhouse be provided with scales for weighing the children. We have been most gratified with the response to this recommendation, especially in the cities and larger villages. Considerable progress has been made also in the rural schools. In one of the counties the Red Cross has helped to equip more than 100 rural schools with scales.

The scale in the schoolhouse, then, becomes a very practical means by which we can detect most cases of malnutrition. The schools must then decide how far their responsibility goes in correcting this malnutrition. Pediatricians have found that undernourished children gain most satisfactorily when given two supplementary feedings a day, one in the middle of the morning session and one in the middle of the afternoon session. The feedings are very simple and usually consist of a cup of milk and a whole-grain cracker. The mid-afternoon feeding may in many cases be taken at home. Since the mid-morning feeding cannot be taken at home, we have recommended to the school authorities that they make it possible for the undernourished children to receive at the schoolhouse this supplementary feeding. In the cities and larger villages the milk is generally delivered at the schoolhouse in half-pint sealed bottles, the school provides straws, and the children sip the milk from the bottle through the straw. Each child rinses his bottle after drinking his milk. The plan is so simple that neither equipment nor workers are needed. The milk dealers usually sell the milk to the school at a reduction in price. The children who can afford to pay for the milk should do so. Funds for milk for the needy undernourished children may usually be raised by an appeal to the mothers' clubs or parent-teachers' associations. In New York State these organizations have been most sympathetic with this movement, and have been most generous in the funds they have placed at the disposal of the school authorities for this purpose. This milk feeding at the school has not only improved the nutritional condition of many school children, but it has been the means of teaching some children to like milk who formerly refused to drink it. The group spirit is strong in children; seeing his friends go daily to receive their milk soon arouses in him who thought he did not like it a strong wish at least to taste it. Soon a liking for milk is developed. This milk feeding at the schoolhouse for the undernourished children has grown very rapidly during the past two years. This has been most gratifying to us, especially in the interest it has aroused among the parents.

In the rural schools the problem is very simple. The undernourished children bring from home an extra supply of milk for these supplementary feedings, and the teacher who understands their needs arranges time for the drinking of the milk.

The midmorning feeding is intended for the undernourished children. There is another group of children whose food requirements must also be considered. I refer to the children, whether undernourished or not, who cannot go home to a good noon meal. In many schools the noon recess is too short to permit the children to go home for lunch. This condition is found in many city high schools where the noon hour lasts only thirty or forty minutes. It is found in the rural schools where the children live too far from home to return for lunch. Again, in manufacturing towns we often find children whose noon meal is most inadequate because their mothers are at work in the factories. We think that a noon lunch at school is most desirable whenever the children cannot go home to a satisfactory meal. The type of lunch and the management of it depend on the kind of school.

In large cities a lunch room manager should be employed. In smaller localities the domestic science class can prepare some simple nutritious dishes. In rural schools the teacher and pupils can with a little equipment prepare one hot dish, such as cocoa or milk soups, etc. We have advocated the noon lunch both by circular letters, by addresses before groups of teachers and superintendents, and by pamphlets.

It is realized, of course, that one meal at school, however ideal, cannot satisfy the nutritive requirements of a growing child; neither will two supplementary feedings necessarily correct malnutrition. All of the living conditions of the child, his hours of sleep, of recreation, the meals taken at home, etc., are large factors in his general health, and our well-intended efforts in school feeding may be entirely frustrated if the hygienic conditions at home are bad. Hence we must advise methods for interesting the child in his own health, so that he will practice at home as well as at school all of the rules for health. School feeding then becomes an educational factor whose influence touches all phases of the child's life. Probably the most effective method yet devised for interesting children in their own health is the nutrition class. We are recommending the formation of nutrition classes just as fast as persons properly trained to conduct them can be found. Such persons should have a general knowledge of the principles of child hygiene, should have a *thorough* training in the science of nutrition and practical dietetics, should be able to advise mothers with different incomes regarding the proportionate disbursement of money for food, and should have some experience in social work. To these qualifications should be added a personality that is pleasing to children, and an enthusiasm for health that may be communicated to them.

MALNUTRITION.

By Lucy H. Gillett, Nutrition Advisor, Association for Improving the Conditions of the Poor, New York City.

THE results of malnutrition appear slowly, so slowly and indirectly that the public has not yet been aroused to its seriousness. Malnutrition is not an individual problem nor one that concerns only the home in which it exists. It is a community problem. It is the problem of every individual.

This point is more clearly understood when we consider what malnutrition means in terms of lowered vitality, of susceptibility to disease, and of reduced output of the individual, on the one hand, and the effect of this in turn upon economic conditions which affect the whole community, on the other hand. Many of the social problems can doubtless be traced to the inability of the worker due to malnutrition. Thousands of dollars are spent each year by both private and public agencies in caring for families that must be helped through no fault of their own. Many children go through school apparently healthy because they are able to be about and look fairly well, but as they become wage earners they find themselves handicapped with a vitality too low to stand the strain of hard work. For this reason they are unable to earn enough to supply the needs of the family, and eventually succumb to disease. The rest is a sad story for them and an expensive one for the State and the community. Perhaps their children, in turn equally unfortunate, travel the same course.

Education is compulsory and at public expense. Meagre evidence from isolated cases makes us wonder how much greater might be the return for the time, energy and money spent in educating our boys and girls if good physical condition could go hand and hand with education, — if every child were physically able to make the best use of the intellectual advantages put before him. What would it mean if 100 per cent of our citizens were 100 per cent effective mentally and physically? While malnutrition is only one of several factors that must be dealt with, it is a very important one. Is it a far-sighted policy on our part to allow the children who are to be our future citizens to drift into preventable conditions that may not only handicap them for life, but may retard the progress of the whole country? It has already been shown that malnutrition is not only curable, but that it is preventable.

The variety of contributing factors in malnutrition affords such a wide range of interest and so many points of attack that all interested not only may but should co-operate. There are physical defects which must be discovered and remedied, there is the diet to be regulated, there are other desirable habits to be established, there may be necessary adjustments in home life; but first of all, and by no means least, there must be the awakening of interest in the minds of both the parents and the children to the need of attention to these factors. Some of this work may be done through general propaganda by means of posters, the distribution of flyers, through magazine and newspaper articles, and through lectures. Much may be accomplished in our schools through the teaching of health habits and the relation of food to health, but there still will remain a certain service that can be accomplished only through individual contact obtained in clinics and conferences.

Each city or town needs leadership. Mothers' meetings and women's clubs, or other types of community gatherings of adults, provide an excellent medium through which to arouse interest in getting a movement started to fight malnutrition. Through them, mothers and fathers may be made to realize the seriousness of malnutrition, the need of attacking the problem and of raising funds.

After the machinery is set in motion, the detection and correction of physical defects are the first steps. Much time may be wasted in trying to build up with food conditions that can be remedied only by medical or surgical treatment. This is clearly an individual problem, and one that must be put into the hands of competent doctors and nurses. They have been trained for special work, however, and their time is most valuable in doing that particular work. It should not be necessary for them to organize and to raise money. They also need the support of the women's organizations in interest and publicity.

Accompanying or following the correction of physical defects, food habits must be regulated both as to kind and amount of food eaten. The principles of a well-regulated diet are easily mastered, so that they may be taught by teacher, nurse and social worker, but in the majority of malnutrition cases the food factor cannot, as many believe, be dismissed by telling a child to drink milk and to eat vegetables. In many cases to make usable suggestions that are at the same time respected, involves a careful study of the whole family, its natural habits and its needs, not of one child only, but of the father, mother and other brothers and sisters. Numbers, ages, occupations and income must be considered. To make the suggestions of lasting value the fundamental food budget must be considered, and in cases of strictest economy one has to understand the difficulties involved in stretching $12 to meet the food needs of a family of 5. Unless this question is handled by some one who understands food economics thoroughly, quite as much harm as good may be done through suggestions that under ordinary circumstances would be appropriate. This part of the malnutrition problem should be in the hands of a well-trained dietitian in close co-operation with the doctor.

It may be that the question of school luncheons will need attention, either mid-morning, mid-day, mid-afternoon, or a combination of two or all three of these hours. This problem will have to be worked out by those best fitted to undertake it. Location and circumstances will determine whether it shall be done by women's clubs, civic bodies, school boards, boards of health, or other organizations.

The encouragement of proper habits of rest and exercise, of regular meals, of eating slowly, of brushing the teeth, of being out in the sunshine and fresh air, of early bed hours, of sleeping with windows open, and other health habits, may be emphasized by various well-informed leaders of clubs and classes. Teachers and club leaders are in a favorable position to influence boys and girls to want to be healthy, to want to be strong, to want to be a positive factor for good. With the interest of the children, and the co-operation of the parents aroused through their various group meetings, there is sure to be good team play with good results. One is quite as likely to meet with failure by ignoring either the one or the other. Lack of child discipline at home is a very large factor in malnutrition. If the mother is told what to do, and the child is interested to do it, there can be but one answer, and that is *success*.

No small part of the malnutrition problem may be met by the social worker. The masses are benefited by mass methods, but there are innumerable cases where failure is attributed to lack of co-operation at home, and these individual cases are what will keep the "job" from being 100 per cent effective. In the majority of cases it is safe to say that a seeming indifference is due to some cause quite remote from the immediate problem in the mind of the outsider, but which in that particular home is a very significant factor. The mother may be working, or she may be willing but uninformed, or unable to make adjustments because of poor planning, or sickness, or she may have a great mental burden to bear under which any one would be indifferent. There is no one better qualified than the social worker to discover these underlying causes and to help the family to adapt its plans so that it may benefit by suggestions given.

The final word in success is co-operation of all those interested, — the public, the doctor, the nurse, the dietitian, the social worker, the family, the child, the club leader and the teacher. Each should realize the benefits to be derived from the special training of the others. Malnutrition is too big a problem for any one group of people to expect to obtain successful results alone.

Health is the fundamental basis of ability and achievement. We want a public consciousness standing so strong for health that every one will do his part to give every child a fair chance. There should be nothing too big to hinder the accomplishment of this ideal.

NUTRITION OF CHILDREN.

By Fritz B. Talbot, M.D., Boston, Mass.

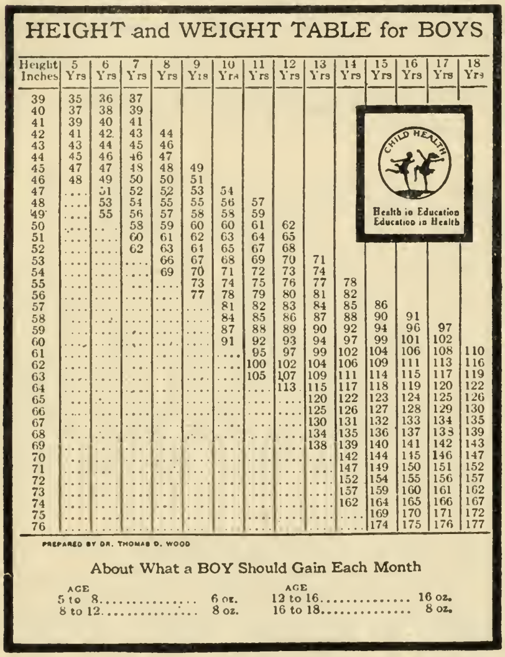
THE many statements which are being made both in public and in private about the astounding proportion of our population of children who are suffering from malnutrition make it important that a clearer definition of what constitutes good and poor nutrition, or malnutrition, be available for the increased number of workers in this province.

There is a widespread opinion that malnutrition is a condition which can be determined by merely measuring and weighing children and comparing these weights and measurements with some available scale of measurements of a normal child. Such a test of nutrition is entirely insufficient, and I want to emphasize that malnutrition is not a disease condition in itself, but is merely a symptom which may result from any one of many diseases, social conditions or poor hygiene, or all combined. It is first necessary to indicate what may be considered as good nutrition.

Good Nutrition.— Good nutrition means a well-nourished and developed child as ordinarily described by a normal physical examination. These two words, without further thought as to what makes up good development and nourishment, are entirely insufficient, and a more detailed description is necessary. Good nutrition includes the following factors: dry, clear eyes; smooth, glossy hair; soft, smooth skin, without eruption; bright facial expression; mouth kept closed; ability to breathe easily through the nose; clear hearing; ability to stand and sit erect, with back straight, shoulders not sagging; abdomen held in, not protruding beyond the chest; firm flesh, covered with a moderate amount of fat; musculature good, muscles well developed and not flabby; color of the mucous membranes and of the skin reddish pink; no dark circles under the eyes; and finally, an air of vitality, elasticity and joy which is characteristic of childhood.

A malnourished child lacks several or all of these characteristics, according to the degree of malnutrition. It will be found, also, that such a child will be either under height or under weight, or both, for his age and race. The malnutrition should be studied further in greater detail and all the various causes taken into consideration. The first and most important cause is insufficient or improper diet.

There are many standards of height and weight for normal boys and girls, but none of these, as yet, are free from error, since there are racial variations in height and weight and variations in different parts of the country. Up to date, however, I think it is best to accept the four standards of nutrition and growth which have been accepted by the National Child Health Organization of America. These figures are given in the following table: —



HEIGHT and WEIGHT TABLE for BOYS

Height Inches	5 Yrs	6 Yrs	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs
39	35	36	37											
40	37	38	39											
41	39	40	41											
42	41	42	43	44										
43	43	44	45	46										
44	45	46	46	47										
45	47	47	48	48	49									
46	48	49	50	50	51									
47	....	51	52	52	53	54								
48	....	53	54	55	55	56	57							
49	....	55	56	57	58	58	59							
50	....	....	58	59	60	60	61	62						
51	....	....	60	61	62	63	64	65						
52	....	....	62	63	64	65	67	68						
53	....	....	....	66	67	68	69	70	71					
54	....	....	....	69	70	71	72	73	74					
55	....	....	....	....	73	74	75	76	77	78				
56	....	....	....	....	77	78	79	80	81	82				
57	....	....	....	....	....	81	82	83	84	85	86			
58	....	....	....	....	....	84	85	86	87	88	90	91		
59	....	....	....	....	....	87	88	89	90	92	94	96	97	
60	....	....	....	....	....	91	92	93	94	97	99	101	102	
61	....	....	....	....	....	....	95	97	99	102	104	106	108	110
62	....	....	....	....	....	....	100	102	104	106	109	111	113	116
63	....	....	....	....	....	....	105	107	109	111	114	115	117	119
64	....	....	....	....	....	....	....	113	115	117	118	119	120	122
65	....	....	....	....	....	....	....	....	120	122	123	124	125	126
66	....	....	....	....	....	....	....	....	125	126	127	128	129	130
67	....	....	....	....	....	....	....	....	130	131	132	133	134	135
68	....	....	....	....	....	....	....	....	134	135	136	137	138	139
69	....	....	....	....	....	....	....	....	138	139	140	141	142	143
70	....	....	....	....	....	....	....	....	....	142	144	145	146	147
71	....	....	....	....	....	....	....	....	....	147	149	150	151	152
72	....	....	....	....	....	....	....	....	....	152	154	155	156	157
73	....	....	....	....	....	....	....	....	....	157	159	160	161	162
74	....	....	....	....	....	....	....	....	....	162	164	165	166	167
75	....	....	....	....	....	....	....	....	....	....	169	170	171	172
76	....	....	....	....	....	....	....	....	....	....	174	175	176	177

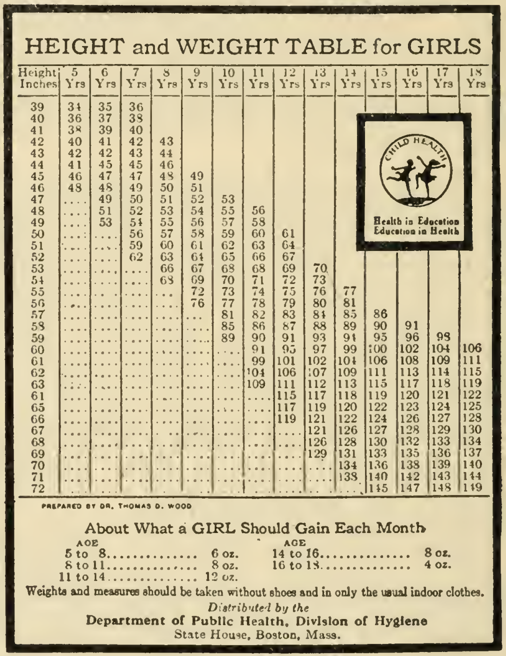
CHILD HEALTH

Health in Education
Education in Health

PREPARED BY DR. THOMAS D. WOOD

About What a BOY Should Gain Each Month

AGE		AGE	
5 to 8	6 oz.	12 to 16	16 oz.
8 to 12	8 oz.	16 to 18	8 oz.



HEIGHT and WEIGHT TABLE for GIRLS

Height Inches	5 Yrs	6 Yrs	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs
39	34	35	36											
40	36	37	38											
41	38	39	40											
42	40	41	42	43										
43	42	42	43	44										
44	41	45	45	46										
45	46	47	47	48	49									
46	48	48	49	50	51									
47	....	49	50	51	52	53								
48	....	51	52	53	54	55	56							
49	....	53	54	55	56	57	58							
50	....	....	56	57	58	59	60	61						
51	....	....	59	60	61	62	63	64						
52	....	....	62	63	64	65	66	67						
53	....	....	....	66	67	68	68	69	70					
54	....	....	....	68	69	70	71	72	73					
55	....	....	....	....	72	73	74	75	76	77				
56	....	....	....	....	76	77	78	79	80	81				
57	....	....	....	....	....	81	82	83	84	85	86			
58	....	....	....	....	....	85	86	87	88	89	90	91		
59	....	....	....	....	....	89	90	91	93	94	95	96	98	
60	....	....	....	....	....	....	91	95	97	99	100	102	104	106
61	....	....	....	....	....	....	99	101	102	104	106	108	109	111
62	....	....	....	....	....	....	104	106	107	109	111	113	114	115
63	....	....	....	....	....	....	109	111	112	113	115	117	118	119
61	....	....	....	....	....	....	....	115	117	118	119	120	121	122
65	....	....	....	....	....	....	....	117	119	120	122	123	124	125
66	....	....	....	....	....	....	....	119	121	122	124	126	127	128
67	....	....	....	....	....	....	....	....	121	126	127	128	129	130
68	....	....	....	....	....	....	....	....	126	128	130	132	133	134
69	....	....	....	....	....	....	....	....	129	131	133	135	136	137
70	....	....	....	....	....	....	....	....	....	134	136	138	139	140
71	....	....	....	....	....	....	....	....	....	138	140	142	143	144
72	....	....	....	....	....	....	....	....	....	....	145	147	148	149

CHILD HEALTH

Health in Education
Education in Health

PREPARED BY DR. THOMAS D. WOOD

About What a GIRL Should Gain Each Month

AGE		AGE	
5 to 8	6 oz.	14 to 16	8 oz.
8 to 11	8 oz.	16 to 18	4 oz.
11 to 14	12 oz.		

Weights and measures should be taken without shoes and in only the usual indoor clothes.

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Insufficient Food.— This can only be estimated by knowing the caloric needs of children of different ages and sexes. The caloric requirements have been usually estimated too low; at least, too low for American children. Holt has recently shown in a paper on the "Food Requirements of Children," about to be published in the "American Journal of the Diseases of Children," that they require more food, especially in the latter part of childhood, than they were formerly supposed to need. The caloric requirements as given by him may be found in the following table: —

Suggested Total Daily Calories.

Age (Years).	Boys.					Girls.				
	Average weight.		Calories per —		Total Daily Calories.	Average weight.		Calories per —		Total Daily Calories.
	Kilos.	Pounds	Kilo.	Pound.		Kilos.	Pounds	Kilo.	Pound.	
1,	9.5	22	100	45	950	9.3	21	101	45	940
2,	12.2	27	93	42	1,135	11.8	26	94	43	1,110
3,	14.5	32	88	40	1,275	14.1	31	87	40	1,230
4,	16.4	36	84	38	1,380	15.9	35	82	37	1,300
5,	18.2	40	82	37	1,490	18.2	40	78	36	1,410
6,	20.0	44	80	36	1,600	20.0	44	76	34	1,520
7,	21.8	48	80	36	1,745	21.8	48	76	34	1,660
8,	24.0	53	80	36	1,920	23.9	53	76	34	1,815
9,	26.4	58	80	36	2,110	26.2	58	76	34	1,990
10,	29.1	64	80	36	2,330	28.5	63	77	35	2,195
11,	31.4	69	80	36	2,510	31.5	69	80	36	2,520
12,	34.2	75	80	36	2,735	35.8	79	80	36	2,864
13,	38.0	84	80	36	3,040	40.6	89	79	36	3,210
14,	42.5	94	80	36	3,400	45.0	99	74	34	3,330
15,	48.2	106	80	36	3,855	48.3	106	67	30	3,235
16,	54.5	120	75	34	4,090	51.0	112	62	28	3,160
17,	57.5	127	69	31	3,945	52.6	116	58	26	3,060
18,	59.8	132	62	28	3,730	52.8	117	56	25	2,950
Adult,	68.0	150	48	22	3,265	60.0	132	44	20	2,640

In applying these figures to a given case it must be borne in mind that there are individual variations, depending upon the child. If a child is very active he may need more calories than are given in this paper, which represent the number of calories required by the average child. When a child is very quiet, he will need fewer calories than are given here. It is essential, however, that the child receive enough food to supply energy for its basal metabolism, for waste products and activity, and to leave a further quota of energy for growth.

Protein.— The diet should, furthermore, contain enough protein to supply the nitrogen necessary for the wear and tear of the body, and also to build up new tissue. The exact amount necessary is not known, but if 2 grams of protein is given for every kilogram of body weight, there will certainly be enough protein for the protein needs of the body. Probably less is necessary the older the individual becomes.

Vitamines.— The diet should contain those growth-promoting vitamines which cause growth in the skeleton such as are supplied in vegetables. Absence of these bodies, even with sufficient calories and protein, could result in an undeveloped skeleton in a child.

Proper Diet.— The diet should be adapted to the child's digestion. There should not be abnormal amounts of fat, carbohydrate or protein. An abnormal diet consisting almost entirely of one or another of these food components may result in malnutrition. It is very common among the well-to-do and the less well-to-do. Malnutrition can often be cured by so regulating the diet that there are proper proportions of the three food components. A pamphlet issued by the Department of Public Health (see Public Health Bulletin of the Department of Public Health, February, 1918), on "Food for Children from Two to Six Years," tells how to select a proper dietary for children, and gives lists of the foods allowed.

Fatigue.— Malnutrition may result from fatigue due either to overdoing and overexercising, or from too little sleep and too much work. The habits of a child should be so regulated that the proper proportion of the twenty-four hours of the day should be spent in rest. The younger children should have a rest in the middle of the day, and the other children a corresponding amount of rest for the strenuous exercise that they may take. Fatigue, therefore, is an important factor in treating malnutrition.

Sleep.— Too little sleep plays a part in fatigue. A two-year-old child should have at least fourteen hours of sleep in twenty-four hours, whereas a twelve-year-old child should have eleven to twelve hours' sleep in the twenty-four hours. Some children require more sleep than others, and should therefore be treated accordingly. During the summer special care should be taken that the child who loses sleep because of the late sunset should have extra rest at other times during the day.

Posture.— Improper posture adds a great deal to the fatigue of the body. The strain inherent in poor bodily mechanics causes extra muscular work. When the abdomen becomes very much sagged it results in poor assimilation of the food, especially of fat, and as a result poor posture in many instances is responsible for malnutrition. Malnutrition can very often be very much improved and sometimes cured, where other things are normal, by merely correcting the posture.

Diseases which Result in Malnutrition.— Chronic intestinal indigestion is a frequent cause of malnutrition, and is due to improper diet. A careful physical examination, an examination of the stools and of the diet, usually makes it possible to regulate the diet and eliminate this disturbance. One of the commonest factors to cause such indigestion is an excess of sugar or candy in the diet. A second common factor is an excess of fat in the diet.

Decayed Teeth.— Decayed teeth may be responsible for malnutrition, first, because they make it impossible for a child to chew his food properly, and thus prepare it for digestion; and second, because the absorption from the bacterially decayed teeth becomes a factor in harming the general health.

Adenoids and Large Tonsils.— These also may be factors in malnutrition and act in two ways: First, in obstructing the air and food passages, and in this way changing the entire shape of the face; they make it more difficult to eat, and are supposed to make it difficult for the air to enter the lungs and thus properly oxygenate the body. In the second place, enlarged tonsils are usually infected and contain small pockets of pus. Absorption from these, both the broken-down products of the tonsils and the bacteria, acts in the same way as absorption from the teeth in diminishing the body's resistance and lowering the health.

Tuberculosis, endocarditis, acute nephritis and syphilis are also causes of malnutrition. In these instances malnutrition is one of the many symptoms of the diseases above mentioned, and it should always be borne in mind that we are dealing with diseases and not with a condition of malnutrition. The diseases themselves should be treated, and the malnutrition treated secondarily. In all of these diseases, if they are cured, the malnutrition will take care of itself.

Lack of Proper Hygiene. — Lack of proper hygiene plays a part in malnutrition. When a child is living in crowded rooms it does not get enough fresh air and sunlight for normal growth unless it runs off into the street. When a child spends the entire day in poorly ventilated schoolrooms, here, again, it does not get an opportunity for proper development. Fresh air and sunlight are essential for good nutrition, and their absence is a predisposing factor for malnutrition. Although hygiene is really a medical problem, in the present day it is becoming a social problem, and is handled best by social agencies.

FOOD ACCESSORY FACTORS IN RELATION TO THE TEETH AND BONES.

By Percy R. Howe, A.B., D.D.S., Chief of Research Laboratory, the Forsyth Dental Infirmary for Children; Assistant Professor, Dental Research, Harvard University.

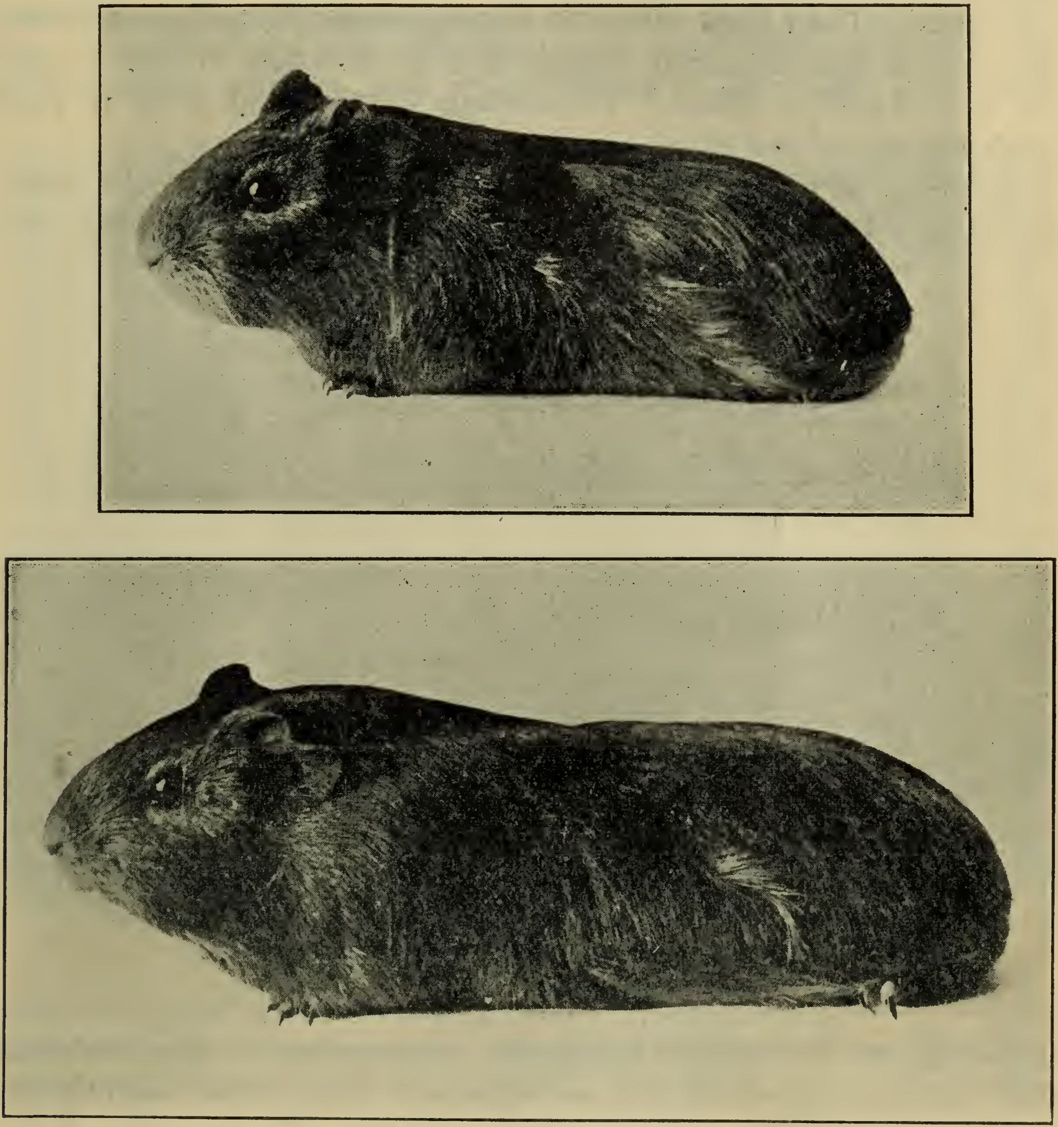
THERE are two very interesting reviews of the literature on vitamines or food accessory factors that have been published quite recently. One is a report compiled by the British government. The other is to be found in the " Abstracts of Bacteriology" for December, 1919.

These monographs enter into the discussion of the nature of vitamines and their classifications. Tables of foods that contain the three groups of these substances are given. It is also shown how fundamental the food accessory factors are in such important health problems as reproduction, growth and resistance to many types of disease. A full review is also given of the work done in the study of the effect of vitamine deficiency upon the bones and teeth. Many writers have observed these latter effects.

McCullom, McCullom and Pitz and others have observed in guinea-pigs loosening of the teeth, with bleeding or congested gums, associated with vitamine-deficient diet. Mrs. May Mellanby produced irregular teeth in pups by rachitic feeding. Zilva and Wells examined histologically the teeth of guinea-pigs fed on a scorbutic diet, and reported degenerate changes both in the teeth and in their pulps.

Now the most generally accepted theory of dental caries is that of Miller. Miller held that the fermentation of carboyhydrates with the formation of lactic acid was the cause of tooth decay. He based his ideas upon the following experiment. Teeth were placed in a fermenting mixture of bread and saliva, which he renewed from time to time that it might not become alkaline. After three months he obtained effects upon some of the teeth which he states could not be told macroscopically or microscopically from true decay. By zinc crystallization he demonstrated the presence of lactic acid. He felt that he had proved his theory. Histologically, Miller studied only the carious mass. He ignored the condition of the tooth substance immediately in advance of the decay. Bacteriologically, his work was limited, and he found no specific organism which he could regard as the etiological factor in caries.

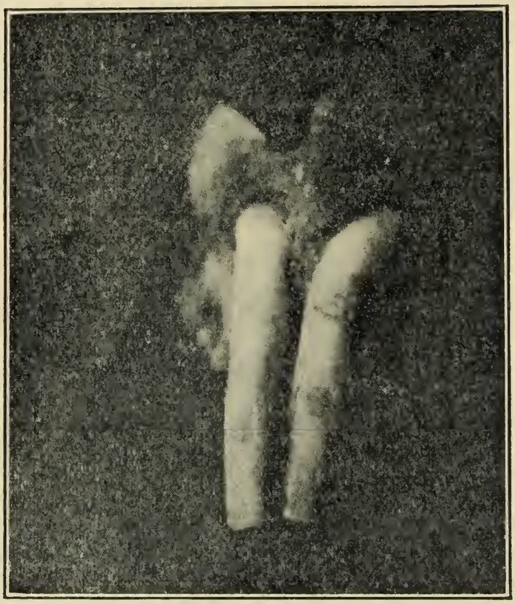
We repeated and extended his experiment. We placed the teeth in fermenting mixtures of dextrose, maltose, lactose, saccharose, and of dextrin, white flour, and of bread. In some of the tubes we used saliva from individuals that had extensive tooth decay; in others, saliva from cases of no decay; and in still others, saliva from mixed cases. After six months some of the teeth showed an etched appearance, some a decalcified effect, and in others no change was discernible. In general, the effects resembled those on teeth that had been subjected to a weak decalcifying agent. The most pronounced thing brought out was the great difference *in structure* of the various teeth. Miller himself noticed this. He wonders why the teeth of pigs which feed largely upon the fermentable foods are free from decay.



Two animals from the same litter, — one fed a normal diet, the other kept for a period on a vitamine-deficient diet, and later placed on a normal diet, — showing effect upon growth and development.

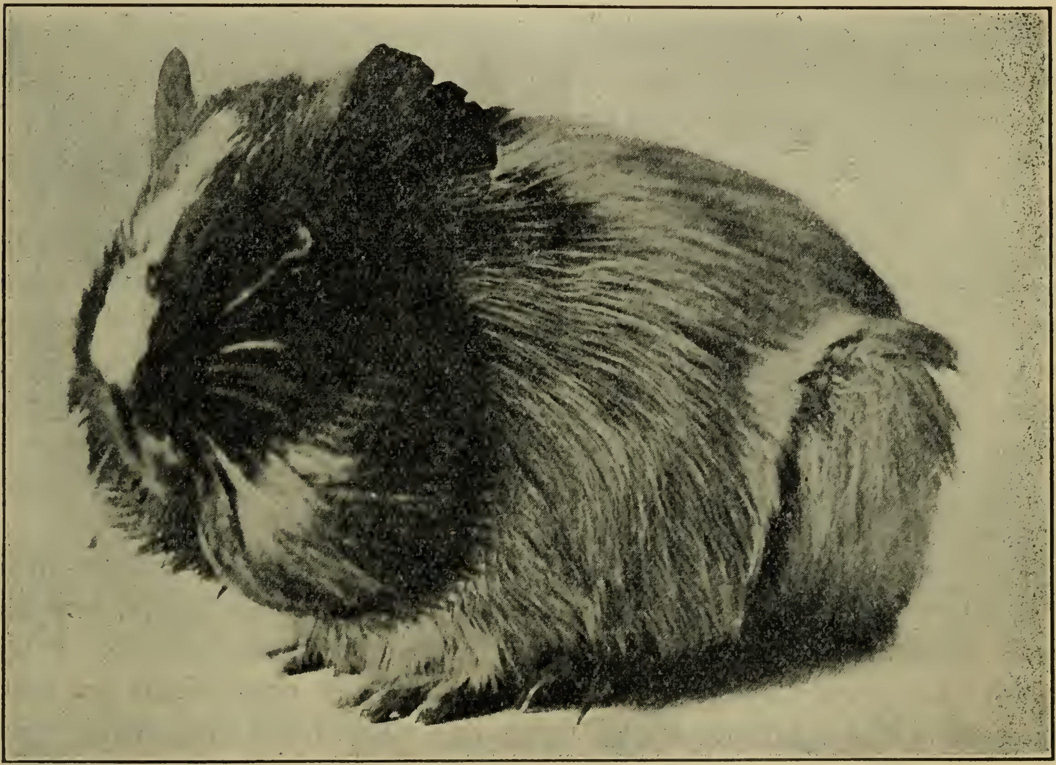
If Miller's theory is sound it should be an easy matter to produce tooth decay in animals by fermentation. We have fed guinea-pigs upon diets containing large amounts of the sugars and starches. This diet was continued for from six months to a year. The sugars were readily eaten and adhered constantly to the tooth surface. The flora of the mouth became aciduric in character, but no effect could be detected in any of the teeth. We fed for three to four months microorganisms isolated from caries, — *B. acidophilus*, *B.* (*X*), *B. ramosus.* The growth was constantly present in their mouths. No effect upon the teeth could be found. The animals all appeared to be in good condition at the end of six months, and even a year.

We have, however, obtained rather extensive effects in the teeth, in the alveolar process, and in the jaws themselves by feeding vitamine-deficient diets. The effects are not confined to the teeth and their adjacent structures, but are to be seen to a certain extent in the skull bones and in other bones of the body. The majority of our guinea-pigs we fed a simple diet of rolled oats and fat-free milk. They received about 25 cubic centimeters of the milk daily and all the rolled oats that they would eat, with a very small piece of carrot and a small leaf of lettuce every other day or every third day. The animals were carefully watched, and when difficulty in the use of their legs was manifest, or difficulty in eating observed, the amount of green food was increased. This was necessary in order to prevent



Alternate zones in the tooth structure indicating periods of normal and abnormal feeding.

death, which at this stage ensues rapidly. Our object was to produce a chronic condition in which the lime would be slowly removed from the bony structure. Thus our experiments extended over periods of from three months to a year. When the onset of the symptoms was so rapid that the animals were unable to eat green foods, we fed them orange juice from a medicine dropper. They took this with great avidity, and its beneficial effects were quickly evident. They were soon able to eat grated carrot, and later thin slices of carrot and lettuce. On the latter diet, combined with whole milk, they soon regained weight and appeared nearly normal. They were then again placed on a diet of rolled oats and fat-free milk, the green food being reduced to the lowest possible quantity. In some cases McCullom's salt mixture, or Mendel and Osborn's, or calcium lactate was added to the diet, although the milk should furnish a sufficient amount of inorganic constituents. Agar-agar was also added in some cases for the effect upon the intestinal tract. By observing the animals, and by the use of such diets, we could keep the animals for a protracted period in any state desired. In this manner we produced a very marked loosening of the teeth, together with an extensive absorption of the alveolar process. If the effect was brought about slowly, and continued for about four months, it resembled the alveolar absorption



Abscess due to pulp degeneracy caused by vitamine-deficient diet.

of senility. If it was brought about with more rapidity and severity, the appearance was more like carious bone. The condition closely simulates the various forms of pyorrhea alveolaris. The gums bled, and in some instances a copious flow of pus occurred.

The teeth, particularly in young guinea-pigs, are regularly decalcified. A distinct bending of the teeth is seen. They may be bent with the fingers. A sharp instrument will penetrate them with ease. In brushing the bones with a soft brush, in the process of cleaning specimens, large portions of the teeth are often removed. The tips of the teeth seem to soften first. Distinct cavity formation appears in some cases. This seems to us to be true caries.

Many irregular arrangements of the teeth were brought about. In one animal the lower teeth became carious and broke off. The upper incisors also became carious and broke or rubbed off. All the teeth were affected and softened greatly. The lower jaw, from the incisors to the molars, became decalcified. The animal had to be fed with the medicine dropper. By careful attention to him we gradually brought him back so that he was able to eat properly. The lower teeth grew out and were fixed in a position in which they were exactly crossed. We had effected decalcification and a subsequent calcification. Later the animal was again placed on the deficient diet, with the formation of large carious areas in his jaws. In this connection it is to be remembered that the guinea-pig is a rodent, and that under certain conditions its teeth will continue to grow.

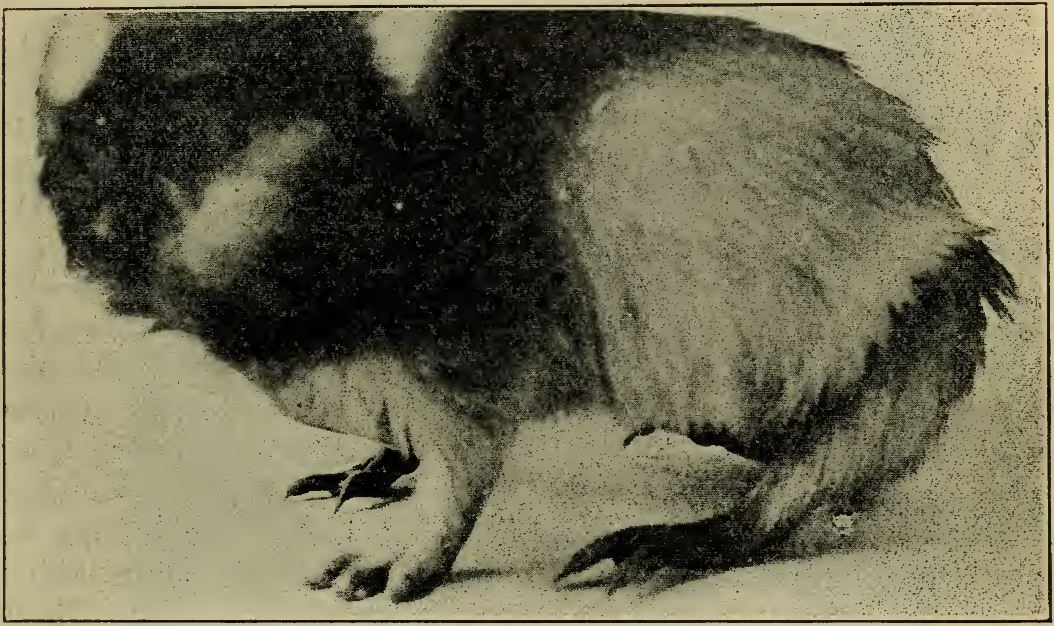
In a number of other cases the lower teeth became decalcified, elongated and bent to such a degree that the lower first molars touched each other entirely across the jaw. Irregular arrangements of the molars are very common. The upper molars of one animal are bent outward at about right angles upon one side of his jaw, while upon the other side the palatal surfaces of the molars are gone. Opposite them on the lower jaw the buccal side of the molars is gone.

Other decalcified areas occur in the maxillary bones and in the bones of the head. In some cases such areas are found at the base of the teeth, the carious process extending entirely through the lower jaw, or at the base of the upper molars within the orbital cavity. Decalcification is often found about the anterior palatal foramin, extending posteriorly to the teeth. Carious areas are found along the side of the jaw, and in some cases the entire jaw has been affected. The ribs and the leg bones also show marked alteration, although we have observed, particularly, effects upon the teeth and jaws.

We have been able to mark the enamel by alternating deficient and normal diets.

The usual joint affections occur in a marked degree, and when this condition has been maintained for a long time, and the animal is then restored to a normal diet, it is found that the legs have become fixed in an abnormal position. This seems to us to be more like rheumatism or arthritis deformans than many experimental conditions that have been called such.

Nervous symptoms are very pronounced at one stage of this feeding. Our efforts to mark the teeth during pregnancy have not been successful, the young being born dead or too prematurely to live.



Rheumatic leg due to vitamine deficiency in diet followed by a correction of the diet. The joint is ankylosed.

The inhibitory effect upon growth is very noticeable. The tendency to certain infections is evident. Abscesses form about the teeth. Lung and bronchial troubles come. It is the ability to produce decalcified areas in the bones of the head and in the teeth, and to effect recalcification by diet, that is one of the most striking things in these experiments.

Modern diets are often deficient in vitamines. The fat in our city milk is low. Our grains are deprived of their germs in the milling process. It is difficult to obtain fresh foods on account of transportation. Yet it would seem that these are essential things in the matter of good teeth. Mother's milk at first (and this must contain the proper elements), whole milk, butter and eggs for the fat soluble vitamines, together with the proper vegetables and green leafy foods, whole wheat as distinct from the degerminized flour, principally for the water-soluble vitamines (although this substance is widely distributed in nature), and fruit juices for their antiscorbutic properties, are food accessory factors that cannot be overlooked if we wish sound teeth. Tooth destruction is one of the first signs of lack of vitamines in the diet.

BODILY MECHANICS: ITS RELATION TO NUTRITIONAL DISORDERS.

By Lloyd T. Brown, M.D., F.A.C.S., Orthopedic Surgeon, Out-patient Department, Massachusetts General Hospital.

WHY should my child have bilious attacks? Why should my child be so constipated that she only has a movement once every two days, or only a small one every day? What makes my child so round-shouldered?

These are questions which are very constantly asked. It is perhaps realized by some people that there is a connection between the bilious attacks and constipation, but very few people realize that the shape of the body may be associated with these two conditions, not only as an effect, but also as a very important cause or contributing factor.

Let us examine a child who was sent to the clinic for a combination of malnutrition and constipation. (See Fig. I.) The first thing that is noticed is that she is a very thin and sickly looking child; that she is also tired looking; that she has very prominent shoulder blades. A still further examination reveals that the abdomen is very large, although the child is thin; that it is more prominent below the navel than it is above the navel,— an important point, as will be pointed out further along in this article. The next point is that the chest is very flat and hollow, and the head is held drooping and forward. All these points taken together give the picture of an old and tired-out man or woman.

One may now rightly ask whether this condition of the body which is so common in all children is of any importance other than that it makes the child look badly. Can it possibly have any connection with the generally tired-out condition of the child? Is it not only the result of the tire and the bilious attacks and the constipation?

The answer to these questions can be arrived at only by considering them from two points of view. First, from the point of view of what mechanical effect the flattened chest and the relaxed abdomen must have on the proper working of the organs that are inside the chest and the abdomen. Second, does the examination of a large group of people show that those who use their bodies in a bad mechanical way or with a faulty posture are more subject to constipation and other troubles than are those who use their bodies in a good mechanical way or in good posture.

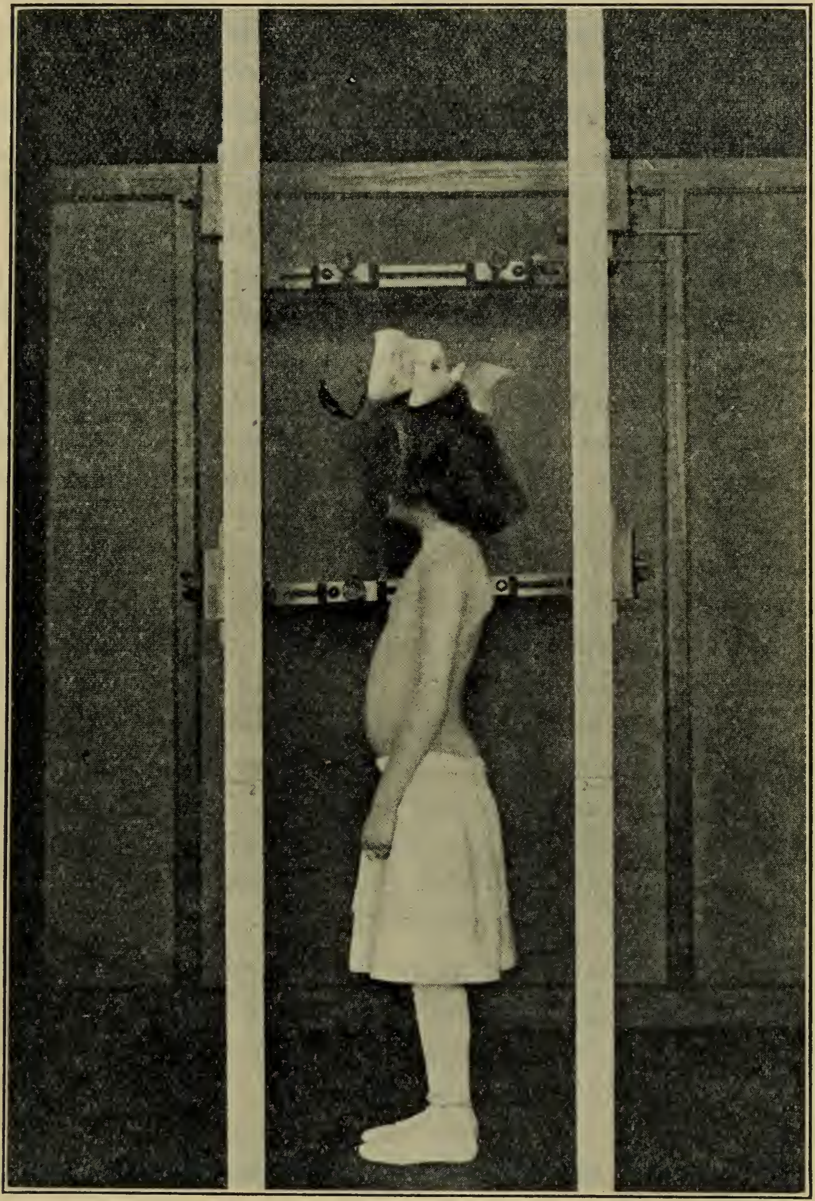


FIG. I. — A child sent to the clinic for constipation and malnutrition. Note the typical posture. (See text.)

Let us take up the mechanical effect and see how the flattened chest and the protuberant abdomen may affect the proper working of the organs of the chest and the abdomen. When the chest flattens, its size becomes smaller not only in circumference but also in depth. The exact amount of this decrease in size will vary from half an inch to nearly 2 inches in certain cases. A perfectly shaped chest is one that is not only full and rounded just below the collar bones in front, but also below the nipple line in the lower rib region, so that the ribs are not flattened or even flared outward, but are convex in shape, thereby tending to make the inside of the chest concave, and so give real support and room to the organs within. A perfectly shaped abdomen is one which in the lower rib section and that part above the navel is full and rounded, and by measurement is larger than that section below the navel. The part of the abdomen below the navel should be flat and less prominent than that above the navel. There is an anatomical reason for this. Nature made the muscles of the lower part of the abdominal wall much stronger than those of the upper part. This is necessary because it is the lower section that is expected to give a large amount of the support to the abdominal viscera. In a faulty posture the flattened chest relaxes the abdominal wall because the breast bone is made to come nearer the pubis, and this causes the lower part of the abdomen to stick out because of the organs inside. The flattened chest not only affects the abdominal muscles, but it also is accompanied by a change in the shape and position of the diaphragm. The diaphragm is a very important muscle because of its function in respiration, and because by its proper action the circulation in the big veins of the abdominal viscera is to a large extent maintained. In the flattened chest position the diaphragm is mechanically in a position of much disadvantage, and the respiration is usually very shallow. This shallow respiration is an important factor in the sluggish abdominal circulation, and it is probable that this improper abdominal circulation is one of the associated causes which may be present in constipation.

There is not space in an article of this length to enter into a further discussion of the other mechanical effects which may come from a faulty posture, but a study of the body from this point of view brings forth many very interesting questions.

Let us now take up the second question, namely, does the examination of a large group of people show that those who use their bodies in a bad mechanical way or with a faulty posture are more subject to constipation and other troubles than are those who use their bodies in a good mechanical way or in a good posture? To answer this question it is necessary to explain just what is meant by good body mechanics or good posture, and what are the criteria by which the mechanics can be judged. To obtain these standards an opportunity was given by Dr. Roger I. Lee of Harvard University to examine the entire freshman class at the same time that the regular physical examination was made. A tracing was taken of each man. These were collected and found to fall naturally into four distinct classes. (See Fig. II.) There are, of course, an endless number of points by which the mechanics of the body can be judged, but it was found that there were four general ones which could be applied in all the cases. As can be seen in Fig. II, under Group A, which was considered good body mechanics, these four were as follows: First, the position of the head; the head is straight above the chest, hips and feet. Second, the chest is up and forward. Third, the abdomen is in or flat, and fourth, the curves of the back are not exaggerated. The other groups, B, C and D, showed increasing variations from this good position. The extreme variations came in the D group, and as can be seen, first, the head is held very far forward; second, the chest

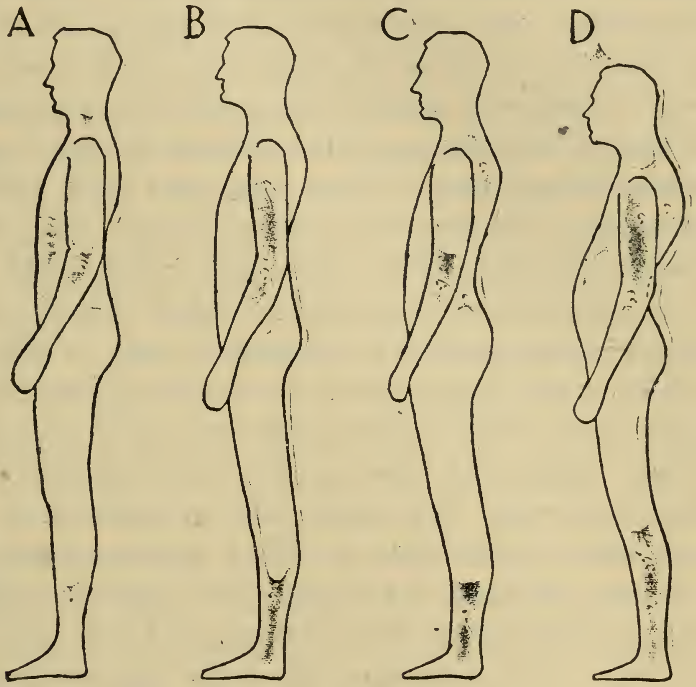


FIG. II.[1]

GROUP A, 7.5 PER CENT.

Good Mechanical Use of the Human Body.

1. Head straight above chest, hips and feet. 2. Chest up and forward. 3. Abdomen in or flat. 4. Back, usual curves not exaggerated.

GROUP B, 12.5 PER CENT.

Fairly Good Mechanical Use of the Human Body. (Note changes from Group A.)

1. Head too far forward. 2. Chest not so well up or forward. 3. Abdomen, very little change. 4. Back, very little change.

GROUP C, 55 PER CENT.

Bad Mechanical Use of the Body. (Note changes from Group A.)

1. Head forward of chest. 2. Chest flat. 3. Abdomen relaxed and forward. 4. Back, curves are exaggerated.

GROUP D, 25 PER CENT.

Very Bad Mechanical Use of the Body. (Note changes from Group A.)

1. Head still farther forward. 2. Chest still flatter and farther back. 3. Abdomen completely relaxed, "slouchy." 4. Back, all curves exaggerated to the extreme.

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[1] From the Boston Medical and Surgical Journal, Feb. 19, 1920.

is very flat and less far forward than the abdomen; third, the abdomen is relaxed and prominent, especially below the navel, and is farther forward than the chest; and lastly, all the curves of the spine are exaggerated to the extreme.

There were 746 men examined, and it is very interesting to see how they were graded according to this classification. There were 7.5 per cent in the A group; 12.5 per cent in the B group; 55 per cent in the C group and 25 per cent in the D group. In other words, only 20 per cent of a group of men well enough educated to have passed the examinations to Harvard College used their bodies in good or fairly good mechanics, while 80 per cent of these men used their bodies in bad or very bad mechanics. Of the whole class, 55 per cent were bad and 25 per cent were very bad. This, of course, refers to the habitual use of the body, but when they were told to stand as well as they could, over two-thirds of them made their postures worse, or did not improve. This means that in this large group of educated men only a third of them knew how to use their bodies properly, and it was mostly chance with these, since many who were good in the habitual posture made their position worse when they were told to improve it. Almost all of the men seemed to think that to take a good posture it was necessary to take a very strained and exaggerated position, which of course was not an improvement, but was an unnatural and impossible one to keep for more than a few minutes. Since the bad postures were found to be so common, it became all the more important to see if there was any possible connection between them and the past and present health of the men. An examination of the histories brought forth the following points: constipation was more common in the C and D groups than in the A and B groups. Three times as many men in the C and D groups showed albumen in the urine as in the A and B groups. One and one-half times as many men had had one operation, and two and one-half had had two or more operations, in the C and D groups than in the A and B groups. Backache did not occur in the A and B groups, but was found in 7 per cent of the C and D groups, and was more common in the D than in the C group.

These findings point out that the bad mechanical use of the body, or the use of the body in bad posture, was associated with more trouble in the past than was the good mechanical use. The question of whether the bad use had any effect on the present condition was answered very effectively in the army overseas. In one division alone over 900 men were not able to stand the strain of the change from civil to army life because of backaches, foot troubles or other conditions. These men when examined from a mechanical point of view were found to be in the C and mostly in the D group. It was also found that by a course of intensive training for six weeks in the proper use of their bodies it was possible to get many of them back to first-line duty. In other words, the bad mechanical use of their bodies had been of no inconvenience for the ordinary run of civilian life, but when they came up against the big test they were unable to stand the strain until they had been shown how they could conserve their reserve power by the simple method of not wasting it.

What was true of the adults in the army is equally true of children. The presence of the bad posture among children is probably more common because the army was made up of carefully selected material, and the weak and sickly were barred out. In the cases with which we are concerned in this paper, the nutritional disorders, the faulty postural condition is practically always present. One of the most difficult and important things in the treatment of the nutrition cases is fatigue. This fatigue is brought about by the combination of so many factors that it is impossible to say which one is the most important, but certainly it is necessary to do away with as many of the vicious ones as possible. There can be no question but that the way the body is used is an important factor which in the past has been almost entirely neglected. There is also no question but that the proper recognition and treatment of the bad postures is of the greatest assistance in correctly carrying out other forms of treatment.

In conclusion, although it is impossible to describe the treatment of the postural defects in detail, the main points are, first, the correction of the bad body mechanics or bad postures by education, not only of the children, but also of their teachers; second, the formation of the habits of good body mechanics or good posture; and third, the establishment of the fact that these already overtired children do not need exercise, but do need rest, and that this rest can best be accomplished by carrying out the principles of good body mechanics in the standing, sitting and lying positions.

THE COMMONHEALTH.

Monthly Bulletin of the Massachusetts Department of Public Health.

Sent Free to Any Citizen of the State.

Merrill E. Champion, M.D., Director of Division of Hygiene, Editor.
Room 546, State House, Boston, Mass.

The Training of Women for Health Work in Nutrition.— When one casts about for women to undertake health work in foods, the two groups of women who stand out as promising are public health nurses and women trained in home economics. Neither type of training as it has been developed thus far is perfect.

The person trained in home economics is well trained in the preparation of foods and in the application of the principles of nutrition to concrete cases, but, except by happy accident, she knows too little about the general health problems of childhood, the organization of public health agencies, and the methods of family approach, which should be at her command, whether she is working with a public school, with a board of health or some special private agency. Students of home economics who wish to take this work should see to it that their work is reinforced in these directions, and graduates of home economic courses who wish to enter this field should expect to take additional courses or to serve an apprenticeship in some organization where nutrition work is well organized.

The training of the public health nurse is strong where that of the home economist is weak. She has a better understanding of all phases of child health, she is in touch with the organization of public health agencies, and she is trained to consider family problems as a whole. She is, however, weak on the very point of the special technical knowledge where she should be most reliable. She knows too little of the fundamental principles of nutrition, and is practically helpless in any situation calling for bedrock economy of expenditure.

From the point of view of organization, the advantages in some types of work of using a single person for the development of all phases of child health are so great that serious consideration should be given to the organization of a program of study — a variant of our public health nursing programs — which shall produce a satisfactory person. For this program the work in nutrition should be increased, and specialized field work under a competent person should be included.

If any real impression is to be made on the eating habits of the American people, it is evident that much of the final individual instruction must come from mothers, teachers and nurses, — people who, to the food specialist, are laymen. A large part of the duty of a specialized nutrition adviser should be to enlist the interest of and to instruct persons who already hold a strategic position with reference to individual children or groups of children. A study of the women already at work in the field of nutrition seems to indicate that for such supervisory positions the most helpful women are those who have been well trained in home economics, and who have had subsequent experience in public health work, in social service or in teaching, which qualifies them for the particular positions they hold. Would not all organizations dealing in any way with child health do well to be sure of expert advice on food problems, whatever agent it may seem best to employ for the final instruction of the individual? — ALICE BLOOD, Ph.D., *Director, School of Household Economics, Simmons College, Boston.*

The Necessity of training Grade School Teachers to teach Nutritional Work in Our Elementary Schools. — The grade teacher has an exceptional opportunity to aid in the campaign for the better nutrition of school children, for she not only has the care and supervision of them for several hours daily, but it is expected of her that the pupils should make certain prescribed progress in their work, and standard progress cannot as a rule be maintained unless standard conditions are provided for that advancement. We have already found by experimental study with school children how vitally not only the progress of the child is determined by the completeness of his nutrition, but also his happiness and contentment. Statistics show that, generally speaking, about one-third of our school children are undernourished, and that this condition of malnutrition reacts not only on the growth of the child, but also on his mental development.

Whereas the problem of nutrition of school children is primarily that of the school physician and school nurse, we must recognize that many schools are without adequate supervision, while others have only a perfunctory supervision, owing to the large number of pupils and inadequate staff to cope with the situation. Even though there may be splendid supervision on the part of the school physician and nurse, the grade teacher, being with the pupils throughout the school day, not only has opportunity to observe how the pupils progress mentally, but she supervises their play, often observes what they have for their luncheon, and many times knows of the home conditions. She is the one who is so situated that she can be of the greatest assistance in co-operating with the school physician and school nurse in obtaining results that will be far-reaching, and once her vision is broadened to realize the importance of proper nutrition she will be only too eager to do her part. It must be remembered that she is not at fault for the existing conditions, for it is only natural that the young teacher should be imbued with the idea that a certain amount of subject-matter should be mastered by the pupils of a grade during the school year, for in the past she has herself been taught primarily along these lines. It has been only in comparatively recent years that exhaustive investigations have been carried out dealing with the causes as to the reason why a certain varying percentage of the pupils were unable to master the requisite amount of subject-matter. The influence of malnutrition, mental deficiencies, eye troubles, adenoids, diseased tonsils, improper posture, improper breathing, nervousness, apathy, etc., on results has had only cursory and detached study in the normal school curriculum.

The importance of the subject is such that we are planning to give a course this coming school year which will include comprehensive and coherent discussions of the above-mentioned factors and their influence in mental development. It seems appropriate that the State Department of Health should focus its attention on an intelligent discussion of these factors, and the results will undoubtedly not only be stimulating to our teachers in training, but will make a better citizenship and better Americans. — Frederic W. Howe, B.S., *Director, Department of Chemistry, Dietetics and Household Sanitation, Framingham Normal School.*

Nutrition Work in the Massachusetts Parent-Teacher Association — The early school years should train for efficient bodies as a basis for all normal development of mind and soul. This has been a part of the creed of the Massachusetts Parent-Teacher Association since it began its work ten years ago. Dental clinics, playgrounds, sanitary school conditions have all accented the desirability of health, but perhaps no branch of health work has interested our parents and teachers more than that of nutrition.

This has taken the form of a study of the best kinds of lunch to prepare for the children who cannot go home to a hot dinner, and of supplying a hot drink or dish at school to supplement the cold lunch. In some of the urban schools the mid-morning feeding is receiving attention.

From a partial survey of the nutrition work of 130 local associations, 2 report serving a hot mid-morning lunch; 16 a hot noon lunch; and 9 serve milk during the day. Eleven others expect to promote the work in the fall.

Through our department chairman, Miss Laura Comstock, a renewed interest has been taken this last year. We have had valuable assistance from county home demonstration agents and from the State Department of Public Health which has sent health exhibits to many of our schools.

The Massachusetts Parent-Teacher Association is certainly an avenue through which to reach mothers of every type all over the State, and to extend the main facts which are known about nutrition. Our associations have always met with generous co-operation on the part of the teachers and the public, and are prepared to go on with the work.

Correct feeding has received a fine impetus in the schools where we have secured the placing of weighing and measuring machines. — MARTHA SPRAGUE MASON, *President.*

A FOOD CENTER AS A PART OF THE BOARD OF HEALTH.

By Mrs. Roland G. Hopkins, Chairman of the Advisory Board, Mrs. Elbert A. Harvey, Expert Dietitian, and Miss Elizabeth P. Lewis, Assistant Dietitian, Brookline Food Center.

Need of the Community.

DURING the last few years there has been a tremendous awakening to the value of health throughout the country. Everywhere there has been evidence of a lack of physical fitness, and now attention is being concentrated on the best methods of combating this condition. It has become established that most of the prevalent diseases may be traced to faulty nutrition, so the problem of proper feeding is of vital interest to the entire country.

We have become fully aware of conditions in Brookline through the extensive health surveys that have recently been made. The records of the draft boards, the studies made of the health condition of children in the public schools, and a report of the infant weighing campaign have produced startling figures. The statistics show that, among the people of Brookline, malnourishment is as generally prevalent as in other communities throughout the United States.

Community Health Agencies.

Excellent work has been carried on by the various welfare agencies for the betterment of the public health, as follows: —

School Department.— The school nurse has been able to accomplish a great deal in the public schools by teaching health habits, urging hours of rest, and proper feeding.

School physicians protect the health of the children by checking the spread of contagious disease.

A free dental clinic in a public school provides dental care and treatment.

Department of Playgrounds and Recreation.— Excellent facilities are provided for physical exercise. A swimming pool and public baths make cleanliness possible for all.

The Board of Health.— Clinics are maintained for the treatment of disease, as well as a clinic for the examination of persons in apparently normal health.

Tenement inspection rectifies unsanitary housing conditions which are a menace to the community.

Milk inspection safeguards the milk supply.

The Food Center, newly established, is a headquarters for instruction on food questions.

Other Agencies (*Charitable*).— The Brookline Friendly Society and Community Health Center send out visiting nurses to give advice and to relieve distress in the community. For necessary corrective work and for valuable preventive work these organizations also maintain an infant welfare clinic for children below school age, a prenatal clinic, a nose and throat clinic, and an eye and ear clinic.

The Anti-Tuberculosis Society maintains a fund to provide milk for destitute families where there is tuberculosis. This fund is dispensed at the advice of the tuberculosis nurses of the board of health.

Notwithstanding these forces had been at work for the protection of the health of the community, it was found imperative to introduce an educational campaign which shall concentrate on the root of the evil. This we believe to be ignorance of proper feeding among *all* classes of people. **No agency existed, until the war crisis proved its dire necessity, which might train people to prepare food intelligently and with the greatest degree of nutritional return at the lowest cost.** The earnest desire of thousands of women to "learn how," for the better health of the family and for economy and conservation, induced the board of health to continue the educational and health work as a department under its supervision. It was considered as important for the board of health to safeguard the health of its citizens as its live stock.

HOW ORGANIZED.

During the war years the Public Safety Committee made an appropriation for the maintenance of a Food Center as a headquarters for instruction on food questions. Two new stores were secured in the center of the shopping district of Brookline Village,— one was equipped with sinks, large gas stove, refrigerator, wall shelves, and a long center table arranged with gas burners and drawers for individual cooking, as a working laboratory. Sixteen women could be accommodated in this room at one time for a cooking lesson, and by using folding chairs many more could be made comfortable for demonstrations. The store adjoining was maintained as an office and consultation room, affording latest books for references, posters and news items on the walls, and current publications available from Washington and the State House. A large variety of tested recipes, mainly for wheat and meat substitutes, was on hand for distribution.

The Food Center was put under the personal supervision of a committee of women who represented the various activities of the town. The chairman of this committee, with her abounding enthusiasm and great executive ability, was largely responsible for its success. The actual work of the Food Center was carried on by an expert dietitian, an office assistant, and a group of volunteer women trained in food preparation and values.

Classes for instruction in food values and cookery were held in the morning, afternoon and many evenings, the aim of the work being to aid the women of the community to maintain the health and efficiency of their families while carrying out patriotically the behests of the Food Administrator. Over 600 women took the regular course, and many more came in for demonstrations, special conferences, to have questions answered, or to consult the latest bulletins.

When the Brookline Public Safety Committee was completing its work as a war emergency organization, many people felt that the need for the Food Center was sufficiently obvious to demand its continuance as a permanent institution. The matter was brought before the town authorities, and on March 25, 1919, it was voted to establish the Food Center (at least for one year) as an agency under the control and supervision of the board of health, maintaining for the present its quarters at 214–216 Washington Street.

It was felt that the original large advisory committee was no longer necessary, but the chairman, as director, and two other women were appointed by the board of health to outline and supervise the future educational work to be projected.

In order that the women of the community might have as expert instruction on food matters as they were receiving in matters of bodily health, a trained expert dietitian was engaged. **As far as is known, this was the first municipal appointment of the kind throughout the country.**

Scope of the Work.

The war drove many lessons home and awakened us from the complacent lethargy on the subject of national health. All over the country there came a wave of interest in and work for the betterment of the health of the children. Nutrition classes have become a part of the curriculum of many of the schools, and scales for weighing and measuring have become a necessary part of the equipment. It is hoped that in time the study of nutrition as a means for preserving the health of the community will become as vital a part of all educational systems as is the knowledge of reading and writing.

Classes are conducted at the Food Center in food preparation, and in the use of food as a means of attaining normal health and weight. These classes have been attended by women and children; but especially significant work was done with the children, who learned to like many valuable vegetables through being able to prepare them themselves. Women were instructed, also, in methods of marketing and buying, showing how to get the most for money expended. Classes in household management and in budget planning proved a popular part of the work.

Besides the cooking classes there have been nutrition classes for malnourished children. One of these, held in co-operation with the tuberculosis nurse of the board of health, was especially valuable.

For those women who have not time to attend classes, the dietitian is always on hand in the office to answer questions. Mothers come for advice on diets for children who are underweight or who have bad food habits; home makers seek advice on diets for normal as well as ill members of the family; and working men and women inquire what foods give the largest amount of health and vigor. Advice is sought in the choosing of food combinations which will provide nourishing, attractive and inexpensive meals. Conferences are held on the division of the income with those who desire to make a satisfactory household budget.

Posters, window exhibits and printed matter are other means used to place food facts before the public. Information on all food subjects and on thrift is distributed by pamphlets, clippings, typewritten sheets and newspaper items.

We realize that all work of this kind, in order to be effective, must be personal and varied to suit the needs of each individual. In order to obtain this personal relation, and gain the complete confidence of the women we wish to help, we go into the homes, but only when asked to do so by the women themselves, or when taken by a nurse or social worker who has previously asked permission to bring the dietitian. This side of the work we hope to increase rapidly in the future.

Co-operation with Existing Welfare Agencies.

Public and Parochial Schools.— The Food Center keeps in close touch with the health work that is conducted in the schools. The school nurse and assistant nurses consult with the dietitian frequently regarding health conditions which confront them.

The Food Center dietitian made a comprehensive survey of the need for a mid-morning lunch among the children in the public schools. Recommendations were presented to the school committee, whereupon milk was served in many of the schools and in the parochial school, and plans were made to engage a full-time nutrition worker.

Posters were loaned to the teachers for exhibition in the classrooms, and copies of the health fairy stories were distributed to teachers of primary and grammar grades.

Talks were given by the dietitian to the Teachers' Club and to groups of mothers and teachers.

The Child Health Organization clown, Cho Cho, was secured for an entertainment free to all school children.

Suggestive diets for boys and girls of normal weight, underweight or overweight were prepared by the dietetian for distribution by the director of physical education at the time the children received medical examination.

Brookline Friendly Society and the Health Center.— The town dietitian talks before the mothers at the Infant Welfare Clinic each week. A course in dietetics is given to the district nurses at the Health Center. Advice on diet or food budgets is given to women who are referred to us by the Brookline Friendly Society or by the Health Center.

Posters on all food subjects are loaned for exhibition at the Health Center.

Boys who are eligible, because of undernourishment, to go to the camp conducted by the Friendly Society, are weighed and measured at the Food Center.

Board of Health.— One page of the Health Bulletin, issued quarterly by the Board of Health, is prepared by the Food Center.

The health officer of the board of health is one of the physicians who give advice and criticism on pamphlets and leaflets issued by the Food Center.

Nutrition clinics are held with the tuberculosis nurse for predisposed children.

The Department of Playgrounds and Recreation.— Milk is served on the playground each morning during the summer months. A subsidy was raised by the advisory committee of the Food Center.

A fifteen-minute talk on nutrition will be given on each playground every week.

One episode of the final summer pageant given by the recreation department will be under the direction of the Food Center.

THE NEXT STEP — TEXTBOOKS IN THE HOME AND SCHOOL.

Out of the years of "war crisis" experience and the year following came the realization that adequate textbooks must be made available for prospective homemakers, mothers and teachers. Cookbooks were legion; exclusively scientific treatises on the chemistry of food were also to be had; but a reasonably popular, readable and comprehensible book, combining recipes with scientific formulæ for food preparation and combination, could not be found to recommend to our women citizens. Our expert then concentrated her energies to this task, and "Food Facts for the Homemaker"[1] is the result. This book is now finding its way to many Brookline households, and is helping to solve the perplexing food problem.

Our next project is to prepare textbooks for the schools, beginning with the primary grades and enlarging the scope of the subject gradually until the high school grades are reached. Thus may be developed a gradual understanding of "food for health," as essential to the life of the nation as the mental growth is essential toward knowledge making for power.

The Food Center in every community may become the open sesame for the 100 per cent vigorous, mentally and bodily, healthy citizen. To the women belongs this task of safeguarding the nation's health standards. Are we everywhere providing the educational facilities for intelligently promoting public health? Can it be done without regard to food and its contribution to health? In Brookline, at least, we believe women can contribute a large share toward increased physical vigor and human happiness through this educational agency.

CO-OPERATION OF THE AMERICAN RED CROSS IN NUTRITIONAL WORK.

By Charles H. Keene, M.D., New England Division, American Red Cross.

THERE are many ways in which the American Red Cross can cooperate in nutritional work in various communities.

The most fundamental, and necessarily the first, is the education of the community as to the need and as to the means. The parents all too frequently have no concept of what is a proper diet; that the usual cold school lunch is often inadequate or even harmful; that children, particularly those from poorer homes, would be greatly benefited by a hot lunch at school, in its entirety, or by hot additions to the lunches which the children bring in those cases where they come from a distance and do not have time or opportunity to return to their homes during the noon hour. This information may be spread by literature, by talks to parents and pupils at schools, churches, granges, farm bureau meetings, by lantern slides thrown on the screen at the local motion picture house, if there be one, by posters placed in store windows, at the town hall, library, etc.

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[1] "Food Facts for the Homemaker." L. S. Harvey. Houghton Mifflin, 1920.

Where there is a community Red Cross nurse she is a most important factor in this most beneficial work. She not only spreads the gospel of better and better prepared food in the home and in the school, but she is a great help in getting together a suitable equipment, in instructing parents, teachers and pupils how best to prepare the lunch, both as regards content and method of cooking, or, as a last resort, she may prepare it herself. This last should be done only rarely and in cases of extreme need and only temporarily. Her need is so great for other activities that as soon as possible this burden should be shifted to others.

When there are other health agencies in the community the influence of the Red Cross should be exerted upon these, whether they be visiting nursing association, farm bureau, tuberculosis league, child welfare association, parent-teachers association, grange, or what not, to get some of them, individually or collectively, to take up this too frequently neglected field of child building.

Every effort should be made by Red Cross workers, whether paid or volunteer, to exert every proper influence upon the selectmen, if it be a town, and upon the Board of Education and its employees, to convince them that this is a proper and essential way to spend town or city funds, so that as soon as possible individuals and health organizations may be relieved of this burden by the municipality making a sufficient appropriation for carrying it on.

Failing in its efforts to get any other group, or any individual, or the town or city to finance nutritional work, the Red Cross may do so with its own funds. This should be for demonstration purposes only, and as quickly as possible the burden should be shifted back where it belongs, — upon the parents or the town. Where a chapter has funds to spare, it may well equip one school in each of several towns with the necessary cooking appliances for hot school lunches, if by this means demonstrations can be started in these communities.

The function of the Red Cross here, as in other health activities, should be to get existing agencies to handle the nutrition work of its community, either through some one agency or by the co-operation of several, including the Red Cross. The Red Cross is peculiarly fitted to do this because it is made up of and has on its committees representatives of all elements, — the officials of the town, the health agencies and the parents themselves. Often all that is needed to get this blessing started is a little push, and the Red Cross is most advantageously placed for taking the initiative.

AN OUTLINE FOR NUTRITION CLASSES.

Margery M. Smith, Director, Dietetic Bureau, Boston, Mass.

The aim of nutrition class work with children is to establish good health habits. Methods vary, but at present there seem to be two distinct types of nutrition classes. One of these emphasizes the relation of food to health through the preparation of foods essential for growing children. Other health habits may or may not be considered. This type of class offers possibilities for the home economics work in our public schools, and is also effective among children of foreign nationalities.

The second type of nutrition class emphasizes other health habits as well as food habits, and without any preparation of food. Through friendly group competition individual children are stimulated to improve poor habits and to continue right habits of living. This latter type of class is adapted to larger groups of children than is the first, since it may be conducted with very little equipment, as suggested in the following outline: —

Essential Equipment.	*Suggestions.*
A pair of scales.	Scales tested frequently to insure accurate weighing.
Measuring rod or tape.	A measuring rod on the scales, or a tape measure pasted on the wall.
Weight for height and age tables.	Weight tables and record sheets obtained from Child Health Organization, New York City; Bureau of Education, Department of Interior, Washington, D. C.
Individual weight charts.	Sample weight chart: (See illustration.)
Individual records of physical examination and social history.	
Stars of several colors.	Different colored stars given for a gain or loss in weight, with a gold star for three successive gains.
Chairs or benches.	Chairs properly constructed for children's use.
Wall space with wire for hanging charts.	
Paper clips.	

Essential Equipment.	*Suggestions.*
Table.	
Blackboard.	
Crayon.	
Desirable Additional Equipment.	
Sink with running water.	Washing hands a part of each lesson.
Soap.	
Scrubbing brushes.	
Individual towels.	
Graphic and Illustrative Material.	
Booklets. Charts. Food slides. Plays. Posters. Rhymes. Stories.	Material prepared by children themselves or obtained from Child Health Organization, New York City; Association for Improving the Condition of the Poor, New York City; Anti-Tuberculosis League, Boston, Mass.; New England Food and Dairy Council, Boston, Mass.; Massachusetts Department of Public Health, State House, Boston, Mass. Colored magazine advertisements for health posters.
Food exhibits.	A basket of real fruit or of vegetables.
Menu books for a week.	Daily food habits learned through menu book, kept by children.
Printed recipes on mounted cards.	Recipe taken home weekly by each child for mother to try.
Tags for recording weights.	To interest parents in gain or loss in weight.
Preliminary Steps.	
Home visit.	Value of nutrition class explained to mothers.
Physical examination of children.	Retarding physical defects corrected, if possible, before first lesson.
Special directions from doctor noted.	
Routine Class Work.	
First meeting: — Height measured. Average weight for age calculated. Charts made.	Average weight line probably raised at end of three months by increased height.
Each successive meeting: — Weights taken and recorded on charts. Exhibit and study of individual charts. Health talk — One good food habit. One other health habit. Conferences with mothers present.	Interest stimulated through group rivalry and through discussions of gains and losses in weight.
Follow-up work in homes.	

With younger children the play instinct is usually so strong that a successful appeal to them can be made to improve their health habits under the guise of learning the rules of the splendid game of health. Each of the following health habits is considered a rule of the game: —

Rules of the Health Game.	*Suggestions.*
Cleanliness: —	
Hands. — Always wash your hands before eating.	Actual washing of hands when possible, or pictures of children washing their hands.
Teeth. — Brush your teeth at least twice a day.	A mock toothbrush drill. Distribution of tooth paste samples and printed instructions on the home care of the teeth. Pictures and rhymes in "A Child's Book of the Teeth," published by World Book Company, Yonkers-on-Hudson, N. Y.
Bathing. — Take a full bath more than once a week.	Suggestions made applicable to homes with no bathtub or running water, as well as those with bathing facilities.
Bowel movement: — At least one bowel movement a day is necessary, preferably in the morning, after breakfast.	Mother's co-operation necessary.
Regular exercise: — Take some regular exercise out of doors every day.	Exercise in form of both work and play, — doing errands, carrying wood, coasting and playing ball.
Rest: — Rest a while each day. Sleep long hours at night, with windows open.	Forms of quiet recreation for both girls and boys, — reading, sewing and games.
Posture: — Sit straight. Stand straight. Go straight.	
Breathing: — Practice regular, deep breathing.	
Food: —	Food suggestions should be influenced by family incomes.
Regular Meals. — Eat three regular meals a day.	Importance of breakfast. Mid-morning or afternoon luncheon.
Chewing. — Eat slowly. Chew your food well.	Story of tortoise and hare. A chewing lesson with plain cookies or simple sandwiches.
Food Likes and Dislikes. — Learn to like all good, nourishing foods.	Story of child who did not like proper food.
Milk. — Take at least a pint of good, clean milk a day.	"Child Alphabet Book," Child Health Organization; milk fairy story; food charts, Nos. 2 and 3, Association for Improving the Condition of the Poor. Taking milk through a straw or from a new cup.
Vegetables. — Eat at least one vegetable besides potato every day. Potatoes, root vegetables and leafy vegetables, all necessary.	A basket of vegetables. Chart showing leafy vegetables. Stories about the vegetable family.
Fruit. — Eat some fruit every day, if possible. A comparison of fresh and dried fruits.	A basket of fruit. Nature's sugar bowls the best kind.

Rules of the Health Game.	*Suggestions.*
Cereals and Bread. — Eat plenty of bread or cereal at each meal.	Chart showing relative value of home-cooked and ready-to-eat cereals. Whole wheat and oatmeal breads especially emphasized.
Eggs. — Eat at least four eggs a week.	Eggs with milk, vegetables and cereals in combination dishes.
Water. — Drink at least six glasses of water a day.	

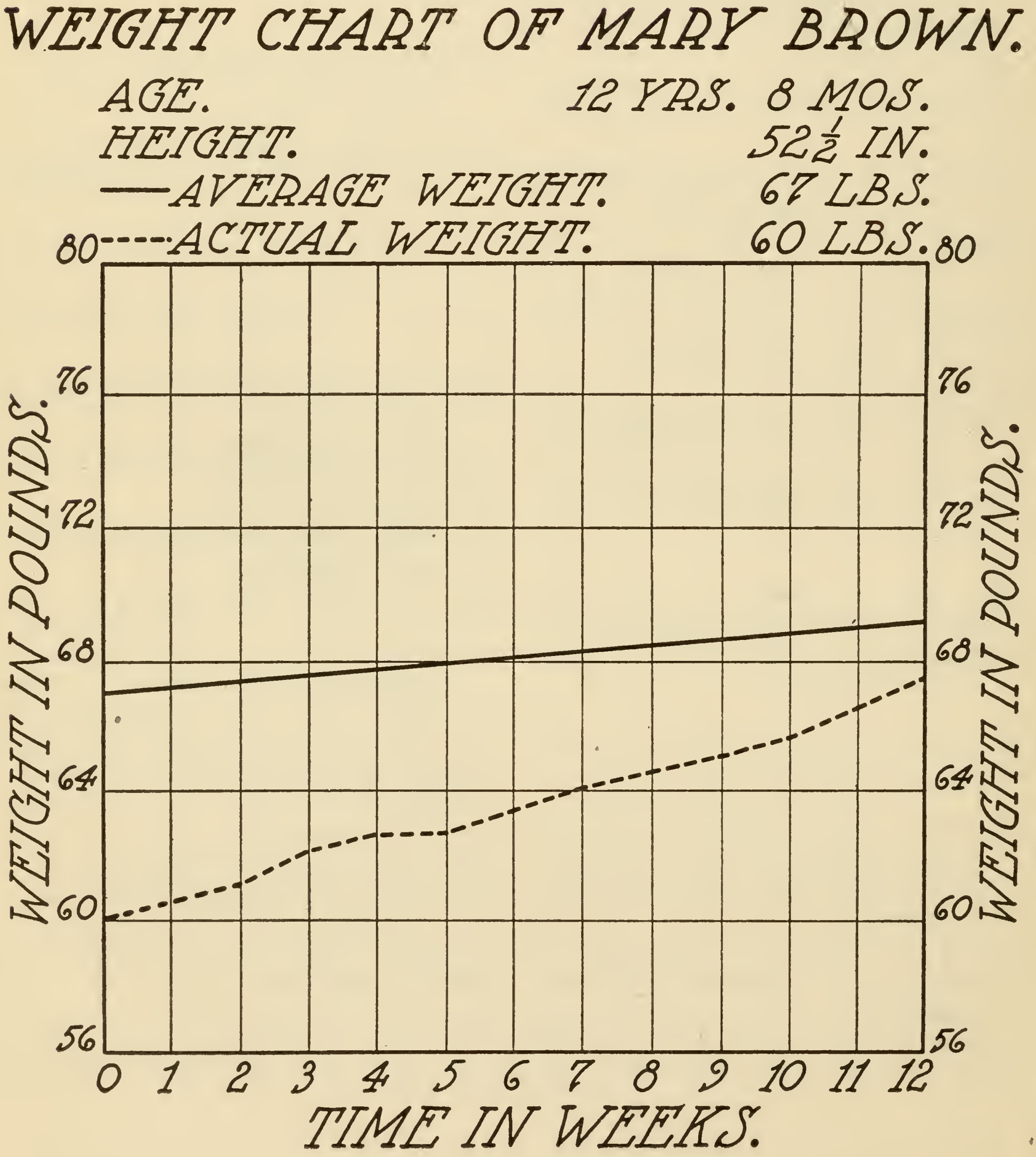
Review of Food Rules.

Eat milk, vegetables, fruit and cereals every day.

Take eggs occasionally.

Meat and fish are not necessary, but may be used sparingly.

Have a substantial breakfast, a hearty dinner and a light supper.



SUGGESTED PLAYS.

The following plays, together with the Playground Health Games, have proved to be of great value in nutrition work with children: —

REVIEW OF THE HEALTH REGIMENT.[1]

Characters

Reviewing Officers.	Captains.	Men.
General Health	*Food*	*Milk*
Colonel Regularity		*Vegetable*
Lieutenant-Colonel Fresh Air		*Fruit*
		Cereal
		Meat
		Fish
		Eggs
		Water
	Cleanliness	*Soap*
		Water
		Wash Cloth
		Scrubbing Brush
		Bath Towel
		Tooth Brush
		Tooth Paste
	Exercise	*Work*
		Play
	Rest	*Sleep*
		Quiet Recreation
	Posture	*Sit Straight*
		Stand Straight
		Go Straight

Stage Setting

Out of doors, with doors to Child Health in center stage, background.

Costumes

Officers and men wear Boy Scout uniforms with cardboard placards.
Toothbrush squad — seven boys in uniform.
Dancing girls — four girls wearing white middy blouses and red ties.
Girl with knitting.
Boy with book.

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[1] By Margery M. Smith, Director, Dietetic Bureau, Boston.

Two girls and two boys with picture puzzle.
Milk — boy representing large milk bottle.
Cereal — boy representing large package of cereal, labeled with different cereals.
Vegetable — girl in paper costume suggesting vegetables.
Fruit — girl in paper costume suggesting fruit.

(*Bugle call off stage.*)

Enter General Health through open doors of Child Health, followed by Colonel Regularity and Lieutenant-Colonel Fresh Air.)

General Health. Colonel, there's not a finer regiment in the world than our Health Regiment. Not a man can be spared from it. Many grown-ups know the worth of all its splendid officers and men; but we must teach boys and girls everywhere about it, so that our dread enemy, Disease, will be conquered. You, Colonel Regularity, are my right-hand man, and your captains rely on your instructions to make the best use of their men. You, too, Lieutenant-Colonel Fresh Air, are indispensable; the Health Regiment could not exist without you. But let your captains speak for themselves and for their companies.

(*Enter Captain Cleanliness with his men, Soap, Water, Wash Cloth, Scrubbing Brush, Bath Towel, Tooth Brush, Tooth Paste. Captain Cleanliness and Reviewing Officers exchange salutes.*)

Colonel Regularity. Captain Cleanliness, we are ready to hear, first of all, a report of your admirable company.

Captain Cleanliness. I am glad of this opportunity to present my men and to explain the position of the Cleanliness company in the Health Regiment. It is our business to do away with dirt and filth in any form, for in them lie countless unseen spies of our enemy, Disease, ready to let him in at the first opportunity. Each of my men has a definite task, and working together [*all men named, each man takes a step forward as his name is called*] we keep hands and faces, and necks and ears and teeth and clothing and dishes and food and houses so clean that our enemy, Disease, and his allies flee from our advance. Sergeant Tooth Brush and his squad will now show you how to clean teeth so well that they will never decay.

(*Enter squad of men, who go through a toothbrush drill under Sergeant Tooth Brush's direction. Following the drill Captain Cleanliness and his company leave the stage.*)

(*Enter Captain Exercise with his men Work and Play. Captain Exercise and Reviewing Officers exchange salutes.*)

Colonel Regularity. Here is Captain Exercise who will tell why his vigorous company is so essential in our regiment.

Captain Exercise. My company is essential to the Health Regiment, for exercise makes strong muscles, quickens the flow of the blood and improves the digestion. Strong muscles, good circulation and a good digestion are powerful allies in overcoming the enemy, Disease. My men Work and Play are equally valuable, though Play seems to be more popular with the young folks.

Neither one, however, can take the place of the other, and the success of our efforts always depends on working closely with Colonel Regularity and Lieutenant-Colonel Fresh Air. It gives me much pleasure at this time to introduce a group of young ladies who will demonstrate for you a most delightful form of exercise.

(*Enter group of girls who do a patriotic dance. Captain Exercise and his company follow the girls from the stage.*)

(*Enter Captain Rest with his men Sleep and Quiet Recreation. Captain Rest and Reviewing Officers exchange salutes.*)

COLONEL REGULARITY. Now a word from Captain Rest, whose company is also indispensable to the Health Regiment.

CAPTAIN REST. I am particularly glad to speak at this time, for the value of my company to the Health Regiment is too often underestimated. We build up tired nervous systems and tired muscles, which would otherwise be an easy prey to our enemy, Disease. The success of my men Sleep and Quiet Recreation also depends upon how closely we work with Colonel Regularity and Lieutenant-Colonel Fresh Air. We are taking this opportunity to show you a few kinds of quiet recreation so necessary for boys and girls during the hot hours of the long summer holidays.

(*A table with four chairs is brought to center stage front. At left center a small rocking chair is placed; at right center another chair. Three girls and three boys. One girl enters, sits in rocking chair and begins knitting. A boy occupies the remaining single chair and begins reading; the other children busy themselves about the table putting a picture puzzle together. Presently the children leave the stage followed by the Rest Company.*)

(*Enter Captain Posture with his men Sit Straight, Stand Straight, Go Straight. Captain Posture and Reviewing Officers exchange salutes.*)

COLONEL REGULARITY. Captain Posture, it is your turn to speak for your gallant men.

CAPTAIN POSTURE. My men Sit Straight, Stand Straight and Go Straight, are always busy helping people to improve their bad habits of sitting, standing and walking. Aches and pains and poor digestion, all allies of Disease, are often caused by incorrect postures. The Health Regiment needs the Posture Company to help conquer Disease, and now my men are prepared to show you that they are well named.

(*The Posture Company demonstrates correct standing, sitting and walking positions before leaving the stage.*)

(*Enter Captain Food with his men Milk, Vegetable, Fruit, Cereal, Meat, Fish, Eggs and Water. Captain Food and the Reviewing Officers exchange salutes.*)

COLONEL REGULARITY. Last but by no means least, Captain Food, let us hear from you and your valiant men.

CAPTAIN FOOD. The Food Company is without doubt the backbone of the Health Regiment. All the rest of its companies are largely dependent on our services to enable them to carry on their own work. Through the activities of my men alone can girls and boys and grown-ups secure materials which make strong bodies that can fight Disease. I especially wish to mention the invaluable service of my men Milk, Vegetable, Fruit, and Cereal (*each man takes a step forward as his name is called*) in furnishing the very best building materials for growing boys and girls. To bring before you once again the value of these men I have named, we have prepared a little exercise introducing brothers Milk and Cereal, with their sisters Fruit and Vegetable.

(*Enter Fruit, Vegetable, Milk and Cereal, who stand in line, center stage front, where each gives rhyme in turn.*)

MILK.

Thousands of youngsters in this land
To take milk I have known.
Never less than a pint a day,
For muscle it makes and bone.
How many here I'm asking
Are really friends of mine?
All who like milk, stand, please.
So many? Thank you. That's fine.

CEREAL.

I have many, many names.
I am served in endless ways.
To know me well is wisdom;
To eat me generously it pays.
A dish of me hot for breakfast
With plenty of milk is good.
It makes one grow strong and sturdy,
As every girl and boy should.

VEGETABLE.

My brothers have spoken wisely,
Milk and cereal all children do need.
But likewise vegetables they must have —
Leaf and root, stalk and blossom, and seed.

(*Show vegetable of each type.*)

Every day is the best day to eat me.
All kinds are the best kinds to eat.
Though remember often the leafy ones.
More vegetables eat and less meat.

FRUIT.

Children may eat cereal daily
With milk and vegetables too.

An excellent plan and none better,
But a word I would whisper to you.
Fruits too are deliciously healthful,
And to make your day's food complete,
From a fresh or a dried fruit sugar bowl
Eat the very best kind of a sweet.

(*The entire company assembles on stage to sing the Health Regiment Song.*)

Health Regiment Song.

Tune: "Marching Through Georgia."

Sing a song of General Health, sing it loud and strong,
Sing a song of all his men to cheer the world along,
For we are death on pains and ills and keen on righting wrong,
While we go marching on healthward.

Colonel Regularity is General's right-hand man,
Lieutenant-Colonel Fresh Air too, helps General Health to plan.
And by them faulty habits are put under heavy ban
While we go marching on healthward.

Our captains are a splendid lot, chosen from the best;
From Cleanliness and Posture, Food and Exercise to Rest.
Following their instructions fills us full of pep and zest.
While we go marching on healthward.

(*Repeat first verse.*)

Chorus.

Hurrah, Hurrah, we're the Regiment of Health,
Hurrah, Hurrah, we're the regiment of wealth,
Send the message all around, east, west, north and south
While we go marching on healthward.

THE HOUSE THAT HEALTH BUILT.[1]

Six children, each carrying a chart.

No. 1. Chart with a picture of a well-nourished girl.
No. 2. Chart with a picture of a pint of milk.
No. 3. Chart with a picture of cereals.
No. 4. Chart with a picture of vegetables.
No. 5. Chart with a picture of eggs, fish and meat.
No. 6. Chart with a picture of fruit.

The construction follows the style of "The House that Jack Built." Each girl repeats her lines after the girl following her has said her part, thus: after

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[1] By Miss Sarah Bower, Domestic Science Teacher, Board of Education, New York City.

No. 2 has finished, No. 1 repeats. After No. 3, both No. 2 and No. 1 again repeat. This continues until all have repeated at the conclusion of No. 6's part. Then all recite together, at the close of which the food charts are extended, which conceal the girls. The last message thus is carried by the charts themselves.

No. 1.— This is the girl so happy and gay,
Who lives in the house that health built.
No. 2. — This is the milk — a pint a day —
That contains a little fairy fay.
No. 1. — To make the girl so happy and gay,
Who lives in the house that health built.
No. 3. — These are the cereals, full of food,
To make this girl grow well and good.
No. 2. — To eat with the milk — a pint a day —
That contains a little fairy fay.
No. 1. — To make the girl so happy and gay,
Who lives in the house that health built.
No. 4. — These are the vegetables, especially the green,
That contain a magic called vitamine.
No. 3. — Besides the cereals, full of food,
To make this girl grow well and good.
No. 2. — To eat with the milk — a pint a day —
That contains a little fairy fay.
No. 1. — To make the girl so happy and gay,
Who lives in the house that health built.
No. 5. — These are the eggs, the fish and the meat,
A little of which each day she will eat.
No. 4. — With the vegetables, especially the green,
That contain a magic called vitamine.
No. 3. — Besides the cereals, full of food,
To make this girl grow well and good.
No. 2. — To eat with the milk — a pint a day —
That contains a little fairy fay.
No. 1. — To make the girl so happy and gay,
Who lives in the house that health built.
No. 6. — These are the fruits; she loves every kind.
If served thrice a day she wouldn't mind.
No. 5. — As well as the eggs, the fish and the meat,
A little of which each day she will eat.
No. 4. — With the vegetables, especially the green,
That contain a magic called vitamine.
No. 3. — Besides the cereals, full of food,
To make this girl grow well and good.
No. 2. — To eat with the milk — a pint a day —
That contains a little fairy fay.

No. 1. — To make the girl so happy and gay,
Who lives in the house that health built.
All. — If you wish to be healthy and happy and free,
Just remember my word and be sure to eat me.

PLAYGROUND HEALTH GAMES.[1]

Routine schoolroom methods of instruction are not practical on the playground. The pupil leaves school the last day joyfully shouting, "No more pencils, no more books!" and from that time forth through his long holiday he is really playing.

So in Newton this past summer our health instruction has been given through the medium of play. First, flyers were distributed, with the words "Playground Health Contest. Wanted: Entries for the Game of Health. Open to all playground boys and girls." This ended with an invitation to sign up for the season with contestant's name, address and the name of the playground. The condition of entry was that each contestant should be weighed and measured. The result was given to him on one of the Child Welfare Organization tags, with their rules on the back of each tag. Those who did not play the rules were counted out.

Another feature of the big game was story-telling. Every story told had a health moral emphasizing the rules of the game.

Again, the children made some games themselves. These were made under the direction of the hand-work supervisor as part of the hand-work program. The younger children cut out pictures from magazines of foods good for them, and pasted them on cards. This game was called "Foods," and incidentally it taught the player what foods were good for him. The game was played like "Authors." The older girls printed the names of a group of foods at the top of a card, such as "Puddings." The younger children cut out and pasted a picture of a pudding good for children underneath the title. Underneath this the older children printed the names of three kinds which would be suitable for all children. For example, under puddings they had rice, custard, and junket. These three cards made a book, and the one who got the most books won the game. There were thirty cards in the set, and when five played the game was most interesting.

Another game, also developed on the playground, was one played like "Old Maid." It was called "Trouble Imps," and the Trouble Imps would get you if you did not watch out. These imps were on a card similar to the Old Maid card, and consisted of bad habits, such as the tea pot, the frying pan, "all-day suckers," late hours, etc. The other cards had pictures of fruits and vegetables good for children. Again, they printed the names. They had "Letty Lettuce," "Parson Parsnips," "Auntie Apple," etc., with the words "Eat me," and underneath the picture good methods for preparing them before they were eaten.

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[1] By Agnes Early, S.B., Supervisor of Health Work, Newton Playgrounds, Summer of 1920.

When they tired of quiet games the children often enjoyed a snappy game of "Beast, Bird or Fish," only they had to think of "Fruit, Cereal or Vegetable" before they counted ten.

And so the game was played with the idea of spontaneous play, which is the only practical playground method.

SCHOOL LUNCHES AND EDUCATIONAL WORK TO OVERCOME UNDERNOURISHMENT.

Minnie Price, Home Demonstration Agent, Hampden County Improvement League.

THE piece of nutrition work carried on in the Belcher School of Chicopee Falls was undertaken as a part of the county program of the Hampden County Improvement League in nutrition work. This piece of work, with the similar piece of work organized and carried on in the Main Street School of West Springfield, was also considered as an experiment or demonstration, the purpose of the demonstration being to gain definite proof that educational work with the serving of the school lunch could bring underweight children up to normal. The two pieces of work were similar, and for the sake of brevity and clearness this discussion will be limited to the one in Chicopee Falls.

The work was carried on co-operatively by the local branch of the American Red Cross, the school department, the local board of health and the Hampden County Improvement League, and was planned and undertaken after definite conferences between the home demonstration agent and each of these organizations in order that the plan of work might be such that definite results could be obtained. These conferences evolved the following plan.

The Chicopee Falls branch of the American Red Cross agreed to provide a budget which would pay for the services of a dietitian and for an assistant to help with the serving of the school lunch. This budget also provided a small sum from which the lunches of needy children might be paid.

The Chicopee school department paid for the necessary equipment, for gas, light and janitor service. Miss Grace Dillon, principal of the school, gave time and thought to the plan and to the actual work, and it was largely due to her interest and co-operation that the worth-while results were accomplished.

One room in the school selected was already equipped for the teaching of cookery, and this room was used as the lunch room and nutrition center.

The additional equipment provided by the school department included an additional gas plate, a tank for hot water, benches for the children to sit upon, a work table, large kettles for soup making, soup bowls for serving and a few pieces of small equipment, and scales for weighing the children. These scales were a permanent and a very necessary part of the equipment for this center. Without the scales definite records could not have been kept, but more important is the fact that without the scales to tell the story of each child's gains and losses the interest of children and parents would not have been aroused and maintained as it was to the very close of the school year. The record cards which were sent home on each weighing day were a constant appeal to the child and to the parent to do everything possible to bring the child up to his normal weight.

The school nurse and school physician helped by giving special attention to the selection of the group, and in the making of physical examinations. In addition to this the school nurse assisted on weighing days and assisted in the making of home visits. This assistance and co-operation was an essential factor in the success of the work.

Since the work as stated above was a part of the county program in nutrition, it was the desire of all connected with it to give some assistance to as many children as possible, but since it was our purpose to gain definite proof of gains in weight, it was necessary for us to limit our record, keeping to a definite group. So while lunches were served to any child in the school who desired it, and who brought the 7 cents necessary for payment, and while educational work was done by means of talks to this larger group, our intensive work and the definite report is limited to the group known as the nutrition class.

How the Nutrition Class was selected and conducted.

The school nurse and the principal selected 50 children for the school physician to examine in order to determine that there was no physical ailment which might prevent normal gain. Out of this group 24 children were selected by the physician to make up the nutrition class. This group was evenly divided between boys and girls, and varied in age from six years to fourteen. In addition to these 24 there were 5 additional children whose records were kept and who were regularly in the group although only slightly underweight.

It was decided that a mid-morning lunch for the children of the nutrition class should be served at 10 o'clock. This was decided because many of the children were very young and because of the fact that a number came from homes in which the mothers went to work early, leaving the child to prepare his own breakfast.

We felt that the serving of one lunch would not counteract the effects of three meals which might not contain the proper food, and that a mid-morning lunch, however wholesome it might be, could not counteract the effects of ignoring simple rules of health. So educational work was undertaken with the child and with the parents. This consisted in talks to the children as a group at lunch time, talks to the children as individuals on weighing days, distribution of individual weight records on weighing days, teaching of health rhymes, home visits to reach the parents, and the placing of recipes and simple health rules in the hands of the children and of the parents. The spirit of competition was appealed to by placing stars on weight cards for accomplishment.

Summary of Educational Work done.

The serving of the mid-morning lunch began January 26, and extended through to the close of this school year. The examination of the children was made the week previous, and the first official record of weight was taken on January 27. Between January 27 and June 24 ten weighing days were held; the children in the nutrition class had 94 simple short talks concerning foods and including simple health rules; 64 leaflets of recipes were distributed; and 260 cards giving health rules and the weight of the child in comparison with his normal weight were distributed. Each home was visited twice during this time, once at the beginning of the work in order to gain co-operation, and once near the close.

Summary of Gains.

Twenty of the 24 children were in the group at the end when the summary of gains was made. Of the other 4, 2 were dropped from the group at the request of parents because the mid-morning meal interfered with the noonday luncheon, 1 boy moved to another school, and 1 girl was placed under the physician's care. The normal gain of these 20, based upon age and sex (according to chart prepared by Dr. Thomas D. Wood), would have been 784 ounces. The actual gain was 1,013 ounces, or a little more than one and one-fourth times the normal gain.

There were 4 children in the group of 20 who failed to make the normal gain. One girl with bad adenoids and tonsils was absent for one month. Her actual gain was 35 ounces, whereas she should have gained 38 ounces. One boy who works after school hours was absent nineteen times. He should have gained 56 ounces, but actually gained only 45, due, we believe, to lack of enough rest. Another boy, from the standpoint of the demonstration, should not have been included in the group because of trouble with swollen glands. He needed the special care, however. Because of his need he was included in the group. His gain was 31 ounces in comparison with 38 ounces, his normal gain. The fourth one who failed to make the gain was a young girl whose father told us that she had always been frail. She gained within 2 ounces of her normal gain, which was an accomplishment, considering her condition in the beginning.

Including these 4 in the total, of course, makes a poorer comparison of the results of the demonstration, and it would truly be legitimate to eliminate the child with the adenoids and tonsils and the one with the swollen glands in making the comparison. Two children in the group of 20 were beyond their normal weight on June 24, while 6 others were within from 4 to 11 ounces of their normal weight. The remaining 8 were within varying distances of their normal weight, although with 7 of these 8 children the amount underweight on June 24 was much less than on January 27.

TYPE OF FOOD SERVED.

Hot, nutritious soup with a bread and butter sandwich was the food served up to the middle of May. One-third of a quart was the amount served. Milk and vegetables were freely used, although we were warned by the numerous mothers on the first round of home visits that their children did not like milk, and could not be persuaded to eat vegetables. The father of the frail child mentioned that he was eager to have the child gain, but he stated that she would not eat any soup with milk in it. He offered to provide anything which we might want if we would prepare soups without milk, so that the child might have the benefit of the mid-morning meal. The tactful dietitian managed so splendidly that the child ate and enjoyed every milk soup placed before her, with the exception of spinach soup, and was really enjoying it until she chanced to hear its name, when she refused to finish her bowl. Meat soup was served once a week. The portion of soup with the sandwich never ran below 350 calories in food value, and was usually higher.

The children were strong in their support of the food served at the kitchen, as the following illustrations show. The mother of one child reports that while out of school because of illness he repeatedly asked for "school soup," until finally the mother sent to the school for a serving of the soup which he liked so well.

The parents sent for the recipes used because their children "liked the soup" and they wanted to learn to make it.

The bowls in which the soup was served all held the same amount, although some bowls looked larger than others because different in style. It was amusing to watch some members of the group slyly select the bowl of soup which appeared to be a larger portion.

During May we began serving milk with sandwiches. This was done because some of the parents thought that the soup was too hot for spring time, but primarily because we wanted every child who came to the lunch room to learn to drink milk. When the change was first made many children stated that they did not drink milk, but the dietitian gave them only a small portion to begin with, and urged them to drink it with the sandwich. Gradually every child in the nutrition group, as well as the other school children who patronized the lunch room, came to the point where they drank the entire one-third quart of milk and really enjoyed it. This was done for a long enough period that, with the discussion of milk and of how it helps boys and girls, we feel sure these children will continue to use it at home.

Two Outgrowths of the Work.

The principal of the school inaugurated what was called a rest period at 10 o'clock every morning. At this time the children who were to have the mid-morning lunch were excused to pass to the lunch room. The other children were urged to bring from home a simple lunch which they ate at this time. Candies and cake were forbidden, but fruit and sandwiches were allowed. This bit of relaxation with the lunch was especially helpful to the children who had eaten little or no breakfast.

In connection with the talks to the children in the nutrition class, emphasis was placed upon clean teeth. As an outcome of interest created, 132 toothbrushes were bought at the lunch room.

Decisions and Suggestions concerning this Work.

For my own guidance in extending this type of work another year, the following decisions and suggestions have been recorded: —

1. Educational work with children of school age can change food habits and can overcome conditions of undernourishment.
2. Serving of school lunches should be accompanied by such educational work.
3. The plan of work must be adapted to the community; for example, if

mothers work in the mills they cannot come to the school for conferences, and the plan for such a community must include time for home visiting.

4. The parents must be consulted, either at the school or in the home, to avoid misunderstandings which lead to ill-feeling, and also to gain co-operation. One such visit must be made either before or immediately following the beginning of the work.

5. It would be desirable to see the parents once in two weeks. This is especially true in cases where there is not the normal gain.

6. If the parents do not speak English, home visiting should be done at night, when the father and children are in the home.

7. The dietitian in charge of the lunchroom must be interested in the problem.

8. Children who are near the same age should form a nutrition group. This simplifies some of the problems of discussion of health rules, and also aids competition.

9. A group should be not larger than 30 in number.

10. We seem to have gained better results with the young children than with the older ones, which, if true, emphasizes the importance of finding the children and of taking steps to overcome the trouble at the earliest possible time.

11. The children who were not in the nutrition class became very much interested in knowing their weight and in comparing it with their normal weight. This suggests possibilities in working with normal children and in preventing their falling into the ranks of the undernourished.

In closing this report a word is due concerning the splendid co-operation of all interested parties.

The interest and co-operation of the school board and of Miss Dillon, the principal, helped in formulating a plan which fitted local conditions. The assistance of the school nurse, Miss Julia Daley, in the making of home visits and on weighing days, was of great value. Through her the arrangements were made for the examination of the children by the school physician. Miss Bernice Hill, the dietitian in charge, was especially fine in dealing with the children and in helping them to learn to like the foods which they needed. This work could not have been undertaken without the financial aid from the local branch of the American Red Cross. Best of all, perhaps, was the splendid response made by the children and parents, which means that the principles taught during those four months will continue to be practiced not only by these children but by others in the home, giving us that for which we are working, — a stronger, healthier childhood.

HOT LUNCHES IN OUR SCHOOLS.

By Laura Comstock, Extension Professor of Home Economics, Massachusetts Agricultural College.

It is commonly thought that malnutrition among children exists only in families of very low income, but statistics do not bear out this belief. In the recent extensive study made in the Kansas City, Mo., schools it was found that "no correlation whatever exists between material prosperity and malnutrition." Studies carried on under the direction of the Children's Bureau reveal the fact that from 20 to 30 per cent of the children in areas canvassed proved to be undernourished.

Dr. Mary Swartz Rose says, "Feed a growing child properly and you have helped to make a good citizen. Every child has the right to a useful body and mind, but in order to have either he must be given the right kind of food at the proper time." A school child is a growing child. His parents feel that his mind is to be improved during the impressionable period of growth when he is attending school, that it is the all-important part, too often forgetting that a useful mind and a useful body go nearly always hand in hand.

Children require much food. Miss McCormick, Supervisor of the Nutrition of School Children in the University of the State of New York, in her excellent bulletin ("The Rural Hot Lunch and the Nutrition of the Rural Child," Bul. 696, University of the State of New York, 1919), says, "Fortunate is the child who receives an adequate breakfast, a substantial dinner and a suitable supper; whose food not only is adjusted to his digestive capacity, but is eaten under circumstances that promote and not hinder digestion." When a child must carry his lunch to school, it takes much thought and careful planning on the part of the mother to see that his three meals are adequate. One hot dish served at school to supplement his cold lunch brought from home makes the problem much easier to solve. The provision of this hot dish is usually undertaken by a group of public-spirited individuals, who, seeing the need, take the initiative in finding ways and means of getting the enterprise under way. This may be a parent-teacher association, woman's club, branch of the Civic Federation, Red Cross or unorganized group.

The members of this body should secure such literature as will give them facts to interest and convince the public that the enterprise is necessary for the best development of their community. The bibliography appended to this bulletin lists desirable material on the subject.

The next step would be to find out the number of children bringing lunches, where the lunches are eaten, under what conditions, and a room that might be devoted to the preparation of the lunch. When the probable number of pupils to be served is known, the list of necessary equipment for preparing and serving one hot dish can be made and prices secured.

To make the work a success, the co-operation of several groups of people is essential; the school committee, superintendent of schools, teachers, health committee, school nurse and any others directly concerned should be interested in the work. Nothing of permanent value can be accomplished without their interest. The work will be advanced more easily and rapidly if all organizations having civic interests and all parents of school children can be actively interested. One organization or a small committee made up of representatives of different organizations may take the initiative; but to secure the proper backing, as many citizens as possible must be interested.

The question of what to serve is important. One hot dish with milk as the foundation ingredient is a safe rule to follow. This may be cocoa, soup or an escalloped dish. It is simple to prepare and serve, and with proper attention given to the making is acceptable to practically every child.

When this hot dish is served, the lunch brought from home should be prepared with this in mind. The parents should be in full sympathy with the hot lunch, so that proper food will be packed in the lunch box. "The School Lunch," a bulletin published by the Massachusetts Department of Public Health, contains suggestions and recipes for the lunch box.

The idea of this work is to provide growing children with adequate food at noon time at school when it is impossible to be at home. One authority states that one hot dish should be served at each meal. Adults find it difficult to sit down to even an occasional meal without something warm to drink or eat. It is much more important that this should be provided for the young person than for the older one. When children are at school five days in the week for thirty-five or forty weeks in the year, is it not time to think of providing them with the essential hot food?

If it is impossible to serve the hot dish, it is certainly possible to provide milk. If bottled this can be taken through a straw with keen enjoyment by the child. One South Amherst country school has done this with fine results. Many city schools have served mid-morning lunches of hot soup or plain milk with great success. The Civic

Federation of Boston has shown how this may be done on a large scale. It makes no difference how large the place or how small, the necessary lunch can be served. If it be in a school where all the children go home for the mid-day meal, then it may be desirable, for health's sake, to serve a mid-morning or a mid-afternoon lunch; if the children bring a cold lunch from home, it can be arranged to serve either whole milk or a hot dish with milk as a foundation, the latter being preferable.

The greatest difficulty in getting this work done is the indifference of parents to the need. What can be done to make the parents feel their responsibility? What organization can take the lead in your community to start this work? Will not you as an individual exert all the influence you have to promote this enterprise?

If you need assistance in any way there are public agencies at hand that stand ready to help. Apply to your county farm bureau, to the Extension Service of Massachusetts Agricultural College, to the State Department of Public Health, to the State Department of Education; any one or all will give the help for which you ask.

It was intimated in the first part of this article that the hot school lunch would be but a beginning. It is an easy thing to get the children to see the connection between right nutrition and a healthy body. Every child loves to be weighed and measured, to keep track of weekly or monthly gains or losses, and to have these results charted. When a loss in weight is noted, the child is keen in discovering the cause and remedy. This would include medical and dental inspection, and a discussion of right health habits. Interesting hygiene work can be developed, and the child led to see the relation between health and right living.

The interest in establishing school lunches is country wide. In the June 1, 1920, issue of "School Life," published by the Department of the Interior, Bureau of Education, Washington, D. C. are reports from Kansas City, Mo., Milwaukee, Wis., Newtonville, Mass., Florida, New York and Minnesota. In most of these places nutritional work also is given. When this article was being prepared, a letter was received from Miss Betsey P. Curtis, Supervisor of School Lunches, Gloucester, Mass., giving the following brief statement of their school lunch enterprise for 1919–20, with the remark, "We expect to branch out the coming year": —

Recess, sandwiches,	55,607
Dinner, sandwiches,	8,247
Hot dish (quarts),	976
Cocoa (quarts),	706
Milk (quarts),	489½

The following statement is quoted from a Gloucester paper regarding this work: —

> The scheme of serving hot lunches to the children of the public school, which has been in operation at the Riggs School since December 1, and has since been extended to the Collins School in the city proper, and to the Bay View, Lanesville and West Gloucester Schools, appears to have proved successful beyond the most sanguine expectations of the promoters of the plan.

Following is a report by Miss Evelyn Kelley, Public Health Nurse, of the work in East Falmouth: —

> Last year all the schools were put upon a one-session schedule. That meant that practically all the children in school were eating a cold luncheon at noon. In taking the matter up with the superintendent of schools, it was decided to refer the problem to Miss Trabue, home demonstration agent of the farm bureau. After making a survey of all the schools, she planned to make an experiment of one school, and chose East Falmouth as a suitable place. Here there are about 100 children enrolled, all but about 6 of Portuguese parentage. A local committee was appointed which was responsible for raising funds and for getting things started. Hot cocoa was served at 2 cents a cup three days a week, and enjoyed by some of the children. The children themselves, under the direction of the teachers, did all the work connected with the preparation and serving. Aside from the original outlay for equipment, the lunch was self-supporting.
>
> After a few months' observation we found one great defect in our plan, — that many children, the ones who needed it most, never purchased the cocoa. To remedy this it was determined to attempt to raise enough money locally to finance the lunch, and then serve it free to all the children. To arouse a little interest the children gave their Memorial Day entertainment in the Portuguese hall. This was followed by a series of slides on foods and a talk by Miss Trabue. During the evening the children sold tags, which they had made themselves, for 5 and 10 cents, for the benefit of the cocoa fund. We then determined to make a canvass for donations from the 50 families represented in the school, allowing each parent to give what he chose, with the understanding that all his children would be served with cocoa every other day during the year. This canvass, made by one of the teachers, by the county agricultural agent for the farm bureau, by another member of the committee and myself, resulted in pledges for $84, to be paid before the opening of school. The remainder of the money, about $50, we propose to raise by allowing the children from the school to sell their tags at the agricultural fair in the Falmouth town hall in September. We intend that this shall be entirely a local responsibility, so that later we may start a similar plan in other sections of the town.

In our own State of Massachusetts, with the need so great, with so many children carrying lunches to school, let our aim for this year be to have a hot lunch in at least one school in each of the 354 cities and towns. *Does your school serve a hot lunch?*

THE FOOD ECONOMY KITCHEN AND ITS VALUE IN THE COMMUNITY.

By Mrs. Horatio Dresser, National Civic Federation, Boston.

IN all city market districts there is great food waste of fresh meat bones suitable for human food. The Boston markets alone send 50 tons of fresh bones daily to the renderer, to be converted into fertilizer, glue, soap and other commercial products. Practically none of this amount is used for human food, though the greater portion could be kept in condition to make a basis for soup to feed the Boston school children, while the fat from these same bones could be rendered and used for cooking suet.

These conditions of waste were well known to Mr. John Kelly, buyer for Dorr's market. Being a thoughtful, public-spirited man, Mr. Kelly felt that some effort should be made to demonstrate uses for these, and at the same time to provide nourishing soups or stews for children. Mr. Kelly interested Mr. and Mrs. Roland Baker in a plan to demonstrate ways of converting these bones into soup and fat.

During the winter of 1917–18 Mr. Kelly, Mrs. Baker and other interested volunteer women opened a soup kitchen at Morgan Memorial, where soup, meat loaf and fat were made and sold.

For the soup stock brisket bones were used. These bones are usually sold to renderers without cutting off the meat between the ribs and the fat which lies at their base. The raw meat and fat thus cut off from 250 pounds of bones weighs about 70 pounds.

To the soup stock, rice or barley or macaroni, with carrots and onions, were added. The soup was sold at 8 cents per quart. The fat saved was carefully clarified and sold for cooking purposes, at 22 cents per pound. The meat was made into loaf, and sold for 20 cents per pound. During this initial winter season over 20,000 rations of food were saved, also 1,000 pounds of fat; and many men, women and children were given nourishing food at low cost, — a concrete illustration of what could be done in food conservation, the country over, if the public were awake to the opportunity, and willing to carry on the work.

In the fall of 1918 the home economics committee of the National Civic Federation enlarged the scope of the kitchen work. In addition to showing a good food use for these bones, the committee wished to work specifically on the problem of providing a nourishing and well-balanced "meal in a dish" for Boston elementary school children's mid-morning luncheon. On the third floor of a centrally located building in the market district equipment was installed for making 750 quarts a day. Steam for cooking and brine for refrigerating were available. A regular staff of two cooks and a kitchen helper, with a dietitian and part-time secretary, comprised the salaried staff. A force of volunteer women was gathered to carry on the various responsibilities, such as preparing vegetables, picking fat from cooked meat and clarifying fat. This volunteer force also helps serve the soup in the schools.

The appeal to this volunteer staff was through a desire to help Boston solve the difficult problem of providing suitable luncheons for elementary school children.

In order to provide the "meal in a dish," to the original formula of the Morgan Memorial soup, shin bones bought with the meat on were added. This gave body to the stock, and also provided a protein element, as all the meat on the brisket and shin bones is cooked separately, then cut in small portions and added to the stock. Either barley or macaroni provides the starch, while a generous proportion of onions and carrots give the essential vegetable factor. The result should be called a stew rather than a soup, for its caloric value is a little over 1,000 calories per quart.

The kitchen was opened at 24½ North Street in January, 1918. During the nineteen weeks from Jan. 14 to May 31, 1919, soup was sent to 8 schools in Boston, 8 schools in Cambridge, and to 7 distributing stations in the two cities. In some schools only special classes were served the soup; in other schools any child who wished to pay the standard price of 2 cents per cup could buy at recess the 7-ounce cup of soup. At the distributing stations, and at the kitchen, soup was sold at 10 cents per quart, and carried home in containers brought by the purchaser. The by-products provide a source of revenue. The cooked bones are sold to the renderer; the clarified suet sold for cooking purposes; and soap was made from trap grease.

The encouraging response of school committee and teachers was due to the definite results which they saw among the children served. Not only gains in weight, but better mental reactions and better classroom conduct.

During the season from October, 1919, to April, 1920, the kitchen confined its work to Boston schools, and gradually enlarged its scope until 43 schools had been served in the greater Boston district.

The school committee has given the National Civic Federation Committee its cordial commendation and support, while it expresses the hope that during another school year many additional schools may have the benefit of this mid-morning luncheon service.

The experiment has passed into an established factor in elementary school education, because it has proved that mid-morning luncheon is essential to the child's all-round development.

THE WORK OF THE FOOD AND DRUG DIVISION OF THE DEPARTMENT OF PUBLIC HEALTH.

BY HERMANN C. LYTHGOE, B.S., DIRECTOR OF THE DIVISION.

THE Food and Drug Division is empowered to enforce the laws regarding adulteration of milk, food and drugs, as well as to enforce the cold-storage laws and some of the slaughtering laws. In addition to this work, which is entirely under the control of the division, it is called upon to make certain analyses of liquors, drugs, chemicals and poisons for police departments, provided that the results of the analyses are to be used for the enforcement of State laws. To carry out this work there is a force of four chemists, including the Director of the Division, one laboratory helper, eight inspectors, and four clerks.

During the fiscal year ending Nov. 30, 1919, the division spent upon this work $34,032.19. The division examined 9,576 samples of milk, 1,382 samples of food other than milk, 262 samples of drugs, and 1,511 samples of liquors and drugs submitted by the police authorities. The division also carried out 262 prosecutions for violation of the various food laws. The fines imposed in these cases amounted to $7,880. These cases were for the sale of adulterated milk, butter, clams, maple sugar, olive oil, sausages, eggs, fish and drugs; for the misbranding of ice cream, compound coffee, olive oil and eggs; for false advertising as applied to eggs and proprietary medicines; for violation of the narcotic law; for various violations of the cold-storage and slaughtering laws; and for obstructing an inspector.

From the foregoing statement it will be perceived that all the work of the division is carried out with the ultimate object of being able to carry on a prosecution, provided that a violation of the law exists and procedure is necessary or desirable for the protection of the public. Therefore strict legal procedure is necessary in all work relating to the collection and examination of samples, as well as in all the other work engaged in by the division.

The division, however, does investigate all complaints received from the public relative to violation of the laws, and if the complainant has the necessary evidence, the division will make such prosecutions as may be necessary, using the complainant, of course, as a witness in court. It so happens that more than 90 per cent of the complaints made by the public are found to be without foundation, many of these complaints being made for personal spite by discharged employees, or employees about to be discharged. Other complaints are made for the purpose of obtaining certificates of analyses to be used subsequently for advertising purposes, and still other complaints have been submitted for the purpose of settling bets.

Some years ago a person requested information regarding a certain asthma cure, submitting an opened sample, and inquiring as to the presence of cocaine. The person was informed that the sample submitted did not contain cocaine, which information was correct. Shortly after this an advertisement appeared in the paper, stating that the Massachusetts State Board of Health had examined a certain proprietary drug for the cure of asthma, and found it to be free from cocaine. The secretary of the Board then obtained samples of the drug, which, incidentally, was sold here only on mail orders, and found that the drug so sold contained cocaine, and with some difficulty the advertising was suppressed.

During the war many complaints were received regarding ground glass in food, erroneously considered to be a poison. These complaints were all investigated and found to be without foundation. It so happened that in a majority of these cases the stores complained against were selling sugar only to their regular customers, and probably the complainants were refused sugar and decided to make things disagreeable for the merchants.

Occasionally, however, valuable complaints have been received from the public, which complaints have resulted in conviction of violators of the law. Examples of such complaints, resulting in prosecution, which have been received are certain ones relative to the sale of rotten meat; the sale of misbranded ice cream; the sale of watered milk; and various violations of the slaughtering laws.

The services of the division are, of course, open to the public for such analyses as may be of purely public benefit, but the person who submits any samples for analysis must expect to be very closely questioned as to all the circumstances relative to the sample submitted, and as to the reason why an analysis is desirable or necessary. The carrying out of such analyses is very expensive, and persons intrusted with the spending of public funds are naturally careful that such funds shall not be wasted.

All samples should, whenever possible, be in the original unopened package in order to assure proper sampling, and in order that the merchant may get a sealed sample provided by the statute for his protection. When submitting milk samples do not submit a sample prepared by the household servant, who may have removed the top for her own use. It is better to see the milk man deliver the milk and bring in the full bottle if there is any cause for complaint.

It will be necessary for persons submitting samples to give the names of all connected with the transaction, and to show that no person has tampered with the sample since it left the hands of the dealer.

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MOUTH HYGIENE NUMBER

MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

EUGENE R. KELLEY, M.D., COMMISSIONER

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THE DEVELOPMENT OF MOUTH HYGIENE ACTIVITIES IN THE DEPARTMENT OF PUBLIC HEALTH.

By Eugene R. Kelley, M.D., Commissioner of Public Health.

THE close relationship between mouth hygiene and the general health of the individual has been recognized for some time past, but mouth hygiene as a public health problem has only recently begun to receive the official attention which its importance in the field of public health warrants. This has been due primarily to the nonrealization of the fact that dentistry has many points of contact with the broader field of public health, and secondarily to the very general lack of knowledge and informed public opinion concerning the subject, without which it is almost impossible to secure the appropriation of public funds for instituting and carrying on measures the value of which have not been conclusively demonstrated over a long period of time.

To provide preventive and reparative facilities in mouth hygiene for the State as a whole would be the ideal manner in which to attack this problem, the size of which among the school children of the State alone is but little recognized save by those who have made a careful study of existing conditions. This might be done through clinics maintained by the community itself or through arrangements for extending to remote sections of the State the service which is now rendered by the practicing dentist in the large community. The cost of such a plan, however, would be almost prohibitive, and only in very exceptional cases would it be possible to institute and carry on such a comprehensive plan of attack. Furthermore, as is well known, an adequate supply of dentists is not available either for public or for private practice. A Department such as this must confine itself largely to preventive work in this field, to the instructing of parents and children, — especially school children, — by means of lectures, lantern slides, demonstrations and exhibits on mouth hygiene, upon the proper use and care of the teeth.

This Department has made a modest beginning along the lines indicated above. In April, 1919, Dr. Edwin N. Kent was appointed on a part-time basis as supervisor of mouth hygiene in the Division of Hygiene. An advisory committee in mouth hygiene was appointed, as follows: Harold DeWitt Cross, D.M.D. (infirmaries), Frank A. Delabarre, A.B., D.D.S., M.D. (orthodontia), Percy R. Howe, A.B., D.D.S. (bacteriology and research), Leroy M. S. Miner, D.M.D., M.D. (oral surgery). In October, 1919, Miss Evelyn Schmidt, a graduate of the Forsyth Dental Infirmary, was appointed temporarily as dental hygienist. Because of lack of funds it was necessary to discontinue her services on January 1, but she was reappointed as health instructor in mouth hygiene in April, 1920, when the appropriation for that year became available. It is largely due to the interest and enthusiasm of Dr. Kent and Miss Schmidt in the work that it has been possible to accomplish as much as has been done with the limited resources at their disposal in the practically untouched field of mouth hygiene in this State.

A survey was at once made through local boards of health to determine the number of dental clinics in the State. There was an excellent response to this questionnaire, and our records now show that there are 90 cities and towns which offer some sort of dental service. The auspices under which these clinics are maintained and their location, charges and other information of value are also a matter of record in the Department, and this information proves of great value in launching new clinics.

Standards for the equipment of dental clinics, a procedure for dental examination of school children, uniform application blank, application card and notification card for the use of clinics, and a monthly report blank, to be filled out by the operators of dental clinics and sent to this Department for record, have been worked out and adopted.

A leaflet on the importance of mouth hygiene has been prepared which covers the subject clearly and simply, and 100,000 copies of this leaflet have been distributed throughout the State. In addition, two pamphlets have been written by the health instructor in mouth hygiene, entitled "Instructions for Home Care of the Mouth" and "Do You Know That?" These have been printed and widely distributed.

An earnest effort is being made to have the Department serve as a clearing house for communities and persons interested in mouth hygiene. The health instructor in mouth hygiene has visited many communities in an endeavor to have dental clinics started, and has also visited many clinics already in operation, with the object of assisting those in charge in every way possible. A mouth hygiene exhibit has been added to the exhibit of the Department on nutrition and child welfare, and these exhibits have traveled all over the State with trained demonstrators, visiting fairs and taking a share in various "health weeks," and in this way large groups of people are being reached. The dental hygienist is available for lectures upon request, and for this purpose has visited many cities and towns throughout the State for the purpose of addressing adults, school children and employees of industrial establishments. A lecture on mouth hygiene has been prepared and sent in the form of a letter to the superintendents of schools to be read to children, and nearly two-thirds of the cities and towns in the State are using this lecture. An illustrated lecture, with a set of slides especially for children, is available, and the Department has also secured a moving picture called "Mouth Hygiene."

Many private organizations have expressed their interest and willingness to aid the Department in its work, and particularly from the home demonstration agents of the Farm Bureau the Department has received continuous interested co-operation in spreading the gospel of mouth cleanliness.

Since the inception of the mouth hygiene activities of the Department 204 lectures on this subject have been given and 57,552 people reached in the 55 cities and towns visited.

As stated above, at the present time 90 cities or towns offer some sort of dental service, and although in many communities this service is inadequate at least it indicates the fact that the need for such facilities is recognized; and during the coming year efforts will be made not only to improve the work already being done in communities in the State but to so strongly present and emphasize the importance of mouth hygiene that other communities offering no such service at the present time will make provision for mouth hygiene work.

To fill the growing demand for lectures on mouth hygiene and for aid in organizing dental work in various communities an appropriation has been asked to provide for an additional health instructor in mouth hygiene for the coming year.

The special mouth hygiene number of "The Commonhealth," to which this is an introduction, is being issued for the purpose of stimulating more general interest and recognition of the importance of mouth hygiene, of making more widely known the activities and plans of the Department for carrying on this work, and of gaining the continued co-operation and assistance of the medical and dental professions and the general public in this work.

MOUTH HYGIENE AND PUBLIC HEALTH.

A REPORT ON WORK UNDER WAY IN THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

By Edwin N. Kent, D.M.D., Supervisor of Mouth Hygiene, Massachusetts Department of Public Health.

SEVERAL years ago Prof. William Osler made the statement, "There is not any one single thing more important in the whole range of hygiene than the hygiene of the mouth."

At the time these words were uttered medical science had established only a small per cent of the evidence we have to-day proving the seriousness of mouth infections, acting as primary lesions that are responsible for dangerous secondary infections in other parts of the body, many of which reach a fatal termination.

The mouth hygiene problem that faces the public health worker may be stated briefly, as follows: —

1. Dental caries (tooth decay) is the most prevalent of all human diseases, being found in a progressing stage in the mouths of at least 95 per cent of our school children.

2. Deleterious systemic effects from this almost universal disease come about mainly through the three local results immediately following its ravages: —

(*a*) A crippled chewing machine, with its working tools wholly or partially destroyed, cannot do the work for which it was intended. The first act of digestion is many times entirely eliminated.

(*b*) Cavity pockets in the extensively decayed teeth found in the mouths of a large percentage of our school children form ideal incubators for the proliferation of bacteria, many millions of which are hatched, mixed with food, and swallowed daily.

(*c*) The abscesses appearing at the end of tooth roots, following death of the pulps, resulting from extensive caries, may cause rheumatism, endocarditis, neuritis, nephritis, arteriosclerosis and other serious systemic disturbances.

3. Eighty per cent of all dental disease may be prevented by proper home care of the mouth and regular operative treatment by a dental practitioner who understands and follows the principles of preventive dentistry.

4. Ninety per cent of our school children do not use a toothbrush

daily, and many of these are not financially able to obtain necessary professional treatment.

We are attempting to meet public needs in Massachusetts through the organization of a special branch of mouth hygiene service under the Division of Hygiene of the State Department of Public Health.

The organization consists of a supervisor of mouth hygiene, an advisory committee of four members of the dental profession, each representing a special field of public dental service, and a health instructor in mouth hygiene who organizes and directs field work throughout the State.

The work of the Department embraces the following items of mouth hygiene service: —

1. Registration of all public dental infirmaries or other movements for philanthropic dental service operating in the State. About 90 cities and towns are now registered.

Questionnaires sent to all infirmary directors in the State made it possible to compile important information on many items in connection with organization, equipment and management, to assist in standardization.

2. Dental infirmary standardization, though not completely worked out, has resulted so far in the standardization of the following items: —

(*a*) Equipment.

(*b*) Examination procedure and records.

(*c*) Procedure in the prophylactic use of silver nitrate.

(*d*) Education of infirmary patients.

(*e*) Clerical system and operator's records.

(*f*) Operator's monthly reports (to the infirmary and the State Department of Public Health).

(*g*) Toothbrush drill.

3. Lecture service has been extended through the same general plan instituted and formerly directed by the supervisor of mouth hygiene under the National Mouth Hygiene Association, *i.e.*, lecture sets, including full manuscripts and lantern slides, are loaned to any one in the State who wishes to present the subject before a public audience. No charge is made for use of lecture or transportation.

4. The health instructor, with the assistance of undergraduates of The Forsyth School for Dental Hygienists, takes an active part in "Health Week" programs in connection with which there is a special mouth hygiene exhibit, lecture service and toothbrush drills.

5. The supervisor of mouth hygiene acts in an advisory capacity in connection with the organization of new infirmaries, the health instructor going to any part of the State to assist in the work.

6. An important educational move is the recent issue of a letter addressed "To the School Children of Massachusetts."

This communication is practically a short lecture preaching the gospel of mouth cleanliness, but the subject-matter is presented with a personal touch, which, in the many districts where personal contact is impossible, has heretofore been lacking, and the value of which is obvious to those who have studied the child mind. This letter is being read by the school teachers to their classes, and, eventually, every schoolroom in the State will be covered.

7. An extensive and comprehensive scheme for State-wide tooth-brush drills has been developed, and this work will follow the present issue of school letters.

8. A registration of infirmary operators, hygienists and assistants has been established.

9. The organization of the dental profession during the influenza epidemic to render public vaccination service is being developed on practical lines to assure the easy accomplishment of an alliance with the medical profession at times when great disasters may overtax the physicians.

10. Steps are being taken to guard public health by urging the recognition by dentists of mouth expressions or symptoms of various forms of systemic disease.

Special bulletins will be issued as occasions require.

11. A special branch of campaign work is under way to urge dentists to give due attention to educational work in private practice as well as publicly.

12. Pamphlets on "The Importance of Mouth Cleanliness," "Instructions for Home Care of the Mouth" and other similar items of literature are freely distributed to schools, organizations, etc., and several special pamphlets, which will be issued at an early date, are being prepared by specialists.

13. Special plans are being prepared for the practical construction of dental infirmary apartments in school buildings.

14. A special set of slides, which is proving of great value in placing the subject in an interesting form before the lower grades of school pupils, has been prepared for young children.

When we consider that out of the 600,000 school children in the State about 550,000 do not give proper attention to the dental toilet, thousands of whom cannot afford to pay for the dental treatment they need, and that the health of our people depends largely on our success in meeting these two problems, it would seem that no argument is needed to prove the importance of the work under way.

The Farm Bureau, the Red Cross and other public welfare organizations are giving us valuable co-operation in the extension of dental infirmary service and mouth hygiene education, and we are deeply grateful for their assistance.

We respectfully solicit the co-operation of all public-spirited citizens in the Commonwealth in our efforts to place within the reach of all our people the information and operative service needed to assure that coming generations of school children shall not be physically handicapped by mouth diseases.

WHAT IS AN ORAL HYGIENIST?

By Evelyn C. Schmidt, D.H., Health Instructor in Mouth Hygiene, Department of Public Health.

We have been passing through days of drives, of taxes, of heroism, of suffrage; days when force of circumstance has given women a wider field of activity than ever before. Women's vocations, still in the embryonic stage, have received the necessary stimulus which leads to future development and to ultimate success. This has been noticeably true in the case of the oral hygienist.

It was in October, 1913, that Dr. Alfred C. Fones of Bridgeport, Conn., started the first training school for oral hygienists, from which thirteen girls graduated the following June. Dr. Fones is commonly called "the father of hygienists," for it was he who gave unlimited time and energy to prove that such a person is needed to help solve the dental problems of to-day when there are far too few dentists to care adequately for the reparative work needed in the mouths of the public, let alone to educate people to the desirability of preventive dentistry.

For three years Dr. Fones carried on his school in Bridgeport, at the end of which time he had proved the need and feasibility of such a person as a dental hygienist to such an extent that training schools had been started at Columbia University, New York, Rochester Dental Infirmary, Rochester, N. Y., and Forsyth Dental Infirmary, Boston, Mass. Additional schools have recently been added at the University of Minnesota, University of California and Colorado College.

In 1915 the first law was passed in Massachusetts allowing dental hygienists to practice in this State. This law was amended in 1917 and further amended in 1920, until it reads, briefly, that any person of twenty years of age or over, who is a graduate of a training school for dental hygienists requiring a course of not less than one academic year, and approved by said board, may be examined by the board of dental examiners, and, if the examination be satisfactory, shall be allowed to practice, under the direction of a registered dentist, in public or private schools or institutions approved by the local board of health. In 1917 the first examination in this State was held by the Board of Dental Examiners.

Considering, therefore, that hygienists have been practicing less than four years in Massachusetts, it is not surprising that people ask, "What is an oral or dental hygienist?"

Perhaps this query can best be answered by the dictionary. "Hygienist: one trained in hygiene, *i.e.*, the science of health, its preservation, and the laws of sanitation." "Oral: pertaining to the mouth." "Dental: pertaining to the teeth." Hence, an oral hygienist is one who is trained in the science of the laws of health as they relate to the mouth. This term is preferable to "dental hygienist" in that prophylaxis not only of the teeth but also of the entire oral cavity is taught. Frequently, dental hygienists are erroneously called "dental nurses," but they are in no sense nurses for their work is entirely preventive. They aim to prevent disease of the teeth and the surrounding structures, not to "tend to sick or infirmed" teeth.

Candidates for entrance to the training course at Forsyth Dental Infirmary (to use a Massachusetts school as an example) must be nineteen years of age, must present letters of recommendation, a certificate of graduation from an approved high school, or an equivalent of four years high school study, and a health certificate from a physician.

The course of study covers twelve months. It includes general and dental anatomy, physiology, dietetics, dental research, materia medica, oral pathology, exodontia, histology and embryology, chemistry (general and dental), periodontia, oral surgery, oral prophylaxis, ethics, dental hygiene, Röntgenology, orthodontia, otology, laryngology and rhinology, etc. The course is conducted in affiliation with Tufts College Dental School, so that the facilities of the various clinics and laboratories of both the Forsyth Dental Infirmary and Tufts Dental College are available.

At first most of the graduate dental hygienists practiced in private offices giving oral prophylactic treatments. Gradually, however, the trend toward public health service has increased. The demand for hygienists is great, — far exceeding the supply. This is doubtless due to the fact that many possible candidates are unfamiliar with the course and its prospects, as well as to the fact that there are as yet only six training schools to supply workers for the thirteen States in which the dental hygienist may lawfully practice.

Of the Forsyth Infirmary graduates twenty-five are already in the public health field. Of these, some are in government service at West Point and at Army hospitals; others are in public dispensaries; several are in public school clinics; while one is in an industrial clinic. The United States Public Health Service, the United States government, the Red Cross, hospital, industrial, department store and school clinics, all are calling for dental hygienists to preach the gospel of preventive dentistry and its relation to the health of the individual and of the community.

Probably there is no stronger argument for the oral hygienist than the draft figures, which showed that over one-fifth of the men called in the first draft in Massachusetts were rejected because of defective teeth, in spite of the fact that dentistry has been practiced in some form for hundreds of years. When one realizes that such conditions have a direct bearing on the physical and mental efficiency of the individual, there can be no question as to the need for some one to educate the people in preventive dentistry.

THE PROBLEM OF DENTAL INFECTION.

By Leroy M. S. Miner, M.D., D.M.D., Assistant Professor of Oral Surgery, Harvard Dental School.

NOT long ago a patient came to the clinic of one of our dental infirmaries in a very bewildered state of mind. She was suffering from a simple acute arthritis, or rheumatism to use the common term. She had been to consult a physician who told her that if she would have all her teeth out she would get well. Thereupon she went to a dentist to have this done, but he refused absolutely to remove a single tooth because he said that her bad teeth could not possibly cause rheumatism or anything else.

During the last few years this same question of bad teeth in relation to general health has furnished a lively topic for discussion not only for medical and dental societies but for people generally, whether at dinner parties, at the factory or on the street. It is a subject that not only concerns the public health, but one that sooner or later is brought home to each one of us individually.

This theory of focal infection, which briefly is nothing more than the idea that pus in a structure like the teeth or tonsils causes disturbances in other parts of the body, as the heart for example, has, like the League of Nations, ardent advocates and equally ardent opponents.

In support of the theory that bad teeth do cause various systemic diseases, such as rheumatism and diseases of the heart, kidney, digestive tract, eyes, etc., is a mass of clinical evidence, presented by reputable men from widely distributed sources, all of which leads to this conclusion. And while from the scientific standpoint the question may not be proved, the value of these clinical observations cannot be denied. Certainly those who have personally observed the almost miraculous cures apparently following the removal of infected teeth, or who themselves have had their suffering relieved by such treatment, cannot but feel that the theory has some foundation in fact.

And yet in considering the matter with an open mind, viewing all the available facts without prejudice, we must recognize the many witnesses who have had their teeth attended to, and in many instances all of them removed, without the slightest relief from their sufferings. Further it is well known that there are many people in whose mouths infection can be demonstrated and who are apparently in good health notwithstanding.

It does not follow, however, because some people fail to get results from having their teeth removed that these teeth had been doing no harm. The problem is not so simple as that. Two facts must never be forgotten in this connection: first, that the condition secondary to the dental infection may be advanced so far that removal of the primary cause avails nothing, for example, if the tissues of a joint in a case of arthritis have been at least partially destroyed we cannot expect removal of infected teeth to do any good; second, that often there are multiple sources of infection from which systemic disturbances may result, the teeth being only one of them. The tonsils and the gastrointestinal tract are frequent offenders. It is but natural in these cases that removal of the teeth produces little or no effect.

In addition, it must be admitted that teeth have been condemned and sacrificed as being guilty of causing trouble and after removal they were found to be free from disease and incapable of doing harm.

In recognizing the fact that we see many people in whose mouths infection is present and yet who seem to be in good health, we also must recognize the possibility that the infection may be doing harm, even though these people are not laid up with an acute arthritis or an endocarditis or some other active disease. Some, in fact, believe that it is quite possible that this infection may cause insidious chronic changes, such as thickening of the artery walls leading to a premature hardening of the arteries or arteriosclerosis, or changes in the kidney or an early beginning of those complex processes leading to old age.

Even though we believe that some persons are in no way injured by infected mouths, it does not rule out the possibility of other persons suffering serious consequences from such infection. In the recent pandemic of influenza many were exposed to the infection who did not have the disease, yet millions died of it. Herein we face the old problem of immunity and resistance, the intricacies of which we know but imperfectly even yet.

It has been stated as an argument against the theory of focal infecton that nature has provided a protective mechanism in the blood that prevents infection being distributed through the system. That is a perfectly sound statement up to a certain point and easily explains why some people may harbor infection in their systems without suffering ill effects. These persons have, as we say, a high resistance. When by excesses of any kind — overwork, overeating or the reverse, resulting in malnutrition — this resistance becomes lowered, the blood cannot do its full duty. Under these conditions infection has a favorable opportunity for doing harm.

With the directly opposite viewpoints, such as given to the patient referred to in the beginning of this article, where may we expect to find the truth? Shall we believe with the radicals that bad teeth are always a menace to health and insist that every dead tooth shall be unceremoniously extracted, or shall we join the conservatives, and, having little regard for the claims of the radicals, believe that most diseased teeth do but little harm, and usually can be taken care of without extraction? Or shall we look for the truth somewhere between the two extremes? What is the safe and sane view of the proposition?

In this, as with other things in life, the middle ground is usually the safest. This general principle may be laid down, however, that whenever any diseased condition of the teeth or gums is found associated with pus, this should receive definite attention regardless of whether or not it appears to be doing any harm to the individual as a whole. Pus is never safe to have in any part of the body and it is but common sense to remove it whenever and wherever it is found. How radical the method shall be to accomplish this depends somewhat on the general condition of the patient. In the light of our present knowledge if the individual appears to be in vigorous health, conservative measures are warranted; but if the patient is suffering from any of the serious systemic diseases in which pus plays a part, radical measures that will insure prompt and thorough elimination of dental infection are not only justified but imperative.

This does not mean, however, that teeth should be ruthlessly sacrificed on snap judgment. Careful diagnosis of the condition of the teeth from clinical and X-ray examination should not only be made, but search for infection elsewhere in the body, especially in those structures that are frequently the site of infection, such as the tonsils, is desirable. Then, with all the facts at hand, a more accurate decision can be made as to where the trouble is located and what treatment is necessary for relief.

X-ray examination of all the teeth is becoming a routine procedure in all cases where infection may be a fundamental factor, and this is of great assistance in making a diagnosis. A word of caution, however, in this connection may not be amiss, for while the X-ray has been of inestimable value, it has at the same time capabilities for harm. Incorrect conclusions drawn from misinterpretation of the radiograph may lead to unfortunate results. Every shadow at the end of a tooth root does not warrant the conclusion that infection exists there and that the tooth should be removed.

So far as dental infection is concerned, then, let us appreciate the value of good teeth and the importance of keeping them healthy. Prevention of dental disease, which will be greatly furthered by campaigns of education such as are now under headway by our State Department of Public Health, is the hope for the future. As for the present, while we must protest against the unnecessary sacrifice of teeth, we must not forget that neglect of dental infection may result in even more serious consequences, and, if it comes to a choice between doubtful teeth and any vital organ, such teeth should be eliminated.

IRREGULAR TEETH: CAUSES, EFFECTS AND PREVENTIVE TREATMENT.

By Frank A. Delabarre, A.B., D.D.S., M.D.

IN the development of the child, nature seems to have a very definite plan for the arrangement of the teeth. In infancy there are none, but as the need comes for a more varied diet to provide material for further growth, the temporary teeth appear one after another and take their place in such a manner that those of one jaw meet those of the other so as to perform the functions of biting and chewing very efficiently.

At the age of six the child has grown so much that the small baby teeth no longer are large enough to do the work and the permanent teeth begin to come, displacing from time to time the first teeth. This change is very gradual and is not completed even when the last baby tooth has been shed at about eleven years of age. The second permanent molars come at twelve, and the third or wisdom teeth at about eighteen. During all this time from birth to adult life the child is constantly growing. The arrangement of the second set is very similar to the first in the curved lines and the close way the lower lock together with the upper when the jaws are at work.

In studying about irregular teeth, it must be kept in mind that the jaws and teeth are a part of the whole body, depending upon the same nerves, blood supply and sources of nourishment as any other part of the body, and do a very important part of the work in making and keeping the body healthy and vigorous. The relationship of the various organs and functions is so close that none can suffer without affecting, in some degree, all the others.

When, for any reason, the teeth do not take their place as nature planned, they become irregular and do not close together properly and the child cannot chew its food thoroughly, thus lowering the efficiency of the function of the teeth. The severity of the case varies in direct proportion as the crookedness interferes with the function.

What makes the teeth come in crooked?

In studying all the races of the earth it seems to be apparent that irregularity of the teeth is more frequent among the more civilized peoples; so the manner of living must have something to do with it. Perhaps 80 per cent of the children in America have crooked teeth.

No mention will be made of the influence of heredity because the men of science are still trying to solve such problems.

Irregularity of the teeth is not, as a rule, a local result of purely local causes, but is more often merely a sympton of a disturbance of some organ or function. The real condition that exists in irregularity is generally a failure of the bones of the face to grow large enough, or in the right direction, to support the given number of teeth in the correct position. So anything that affects general bodily growth and development is apt to find expression, also, in the bones of the face. In other words, this is first of all a problem of growth. For example, where a mother during pregnancy and the period of breast feeding suffered from a scant or poorly balanced diet we may expect to find a poorly developed baby. What is true of these early months of life continues true through all subsequent periods, particularly during childhood, when the demand for proper food to sustain life and provide additional nourishment for growth is twofold.

There are a number of diseases, known as "nutritional" or "dietary" diseases, which appear as a result of faulty diet, and are recognized by their influence on the growth or health of the bones, skin, etc. So in a roundabout but positive way irregular teeth result from faulty diet.

The food should be properly chewed in order that it may be prepared, by being ground up and mixed with saliva, for further digestion in the stomach and intestines. Unless the food is well prepared in the mouth, poor digestion results, and that means poor nourishment and growth, general and local.

Exercise also is necessary for full development, and unless the jaws are exercised by use there will be incomplete development locally.

Next in point of time the young child is apt to acquire various habits that directly and powerfully influence the local growth. Sucking the thumb or pacifier distort the soft and yielding bones into a wrong shape. At these early ages bones are easily molded or bent.

Mouth breathing is one of the most frequent and serious causes of irregular teeth. It is generally started by a common cold or because of adenoids or enlarged tonsils. It results in narrow jaws and a high palate, which tends further to narrow the channels of the nose.

If the heart is weak or the blood not normal; if the lungs are diseased or the liver and intestines not functioning properly; if any vital organ or function is not performing its duty, there will result a corresponding decrease in vitality and growth. Remember that all are dependent upon one another.

Because of its frequency, one of the most important causes is neglect of the temporary teeth, although it acts mainly in a local way.

Decay brings pain and soreness so that the child bolts its food. Loss of any tooth deprives the remaining teeth of the neighborly support they need to keep the curved arch intact, and they drift out of their true position and crowd the permanent teeth that should occupy the space later. Each tooth is so shaped that it will fit against the opposing teeth only when it occupies its true position. If it drifts it cannot do so, and there is a decided lowering of efficiency in chewing.

Abscesses of the teeth have a very great influence on general health, and thus indirectly on the local growth, and they should and would not occur if proper attention were given to the care of the mouth. If the baby teeth are neglected the permanent teeth are very apt to come in crooked.

There are other causes, more remote and indirect, of scientific rather than practical interest. If your child has irregular teeth it will be sure to show the workings of some one or more of those mentioned, and that will be sufficient warning for you to have the matter investigated.

Emphasis should be made of the fact that many causes of irregularity are present years before you would be able to recognize any disturbance in the arrangement of the teeth.

The main questions now are: Of what importance to the child's welfare is this subject? Is such a condition bad enough to warrant its correction and can it be done?

Before answering these questions by outlining the effects, it should be understood that, being a matter of arrested or distorted growth, its first appearance is so slight a change from the normal as to escape the notice of the parents, but the trained specialist can, as a rule, recognize its oncoming even before any permanent teeth appear, surely at the age of five and many times before that.

It is true it is not a question of life or death, except in a very indirect way through the influence of this local function on all the other organs and functions.

In the first place we can pass by the fact that irregular teeth do very greatly affect the facial appearance, even though that may be a matter of great concern to the individual in his social relations.

The most important and constant effect is the lowered efficiency of chewing, which leads directly to poor digestion and everything that follows in the train of insufficient nourishment. The whole body suffers in growth, tone and the ability to resist disease. The full value of the food cannot be extracted and distributed to the different tissues of the body unless it is properly digested. The first process of digestion is the grinding of the food and mixing it with saliva. You cannot run a good kitchen fire with furnace coal.

Decay is more apt to occur in irregular teeth because it is much more difficult to keep them clean.

Pyorrhea or Rigg's disease is a common result arising from a lack of use or overuse of certain teeth. The consequences of this disease are serious, resulting in early loss of the teeth by loosening. More important still in some cases is the appearance of some organic or systemic disease through the absorption and distribution of infectious material from the pus pockets around the roots. Among these may be mentioned rheumatism, valvular heart disease, kidney trouble, etc.

When it is associated with mouth breathing, as is often the case, the child is much more apt to become infected with the diseases of childhood, like measles, diphtheria, pneumonia and lung troubles, like tuberculosis. It is a vicious habit that should in every case have immediate attention, surgical if necessary, followed by a long and faithful series of breathing exercises, and correction of the crooked teeth.

There is an undoubted effect on the mental attitude and capacity of a child whose teeth are crooked. This is hard to prove, but it has been repeatedly observed that the child that is listless, inattentive and below the proper grade in school becomes alert and recovers the lost ground when the teeth are straightened. It is explained by the added growth of the parts which gives relief from the nervous tension or irritation that comes from the crowding of erupting teeth.

This nervous irritation is no slight thing to be ignored, and is many times accountable for the cross, irritable, fretful periods that many children exhibit during the time of teeth cutting. In the infant it may be severe enough to cause convulsions, and in the older child more serious nervous disturbances.

It arises in this way. The tooth forms within the bone from the tooth "bud," which is a highly specialized group of cells, blood vessels and nerves. The tip of the crown is first formed and grows layer by layer, pushing itself toward the surface as it grows, with its lower forming end resting directly upon the bud. Until the root end is completed, this forming end is sharp as a knife. Anything that hinders its progress in coming to the surface causes it to press backward on the sensitive nerves and irritate them. This irritation need not be severe enough to give any actual pain, but it is the constant repetition of repeated shocks that finally produces a nervous symptom. It is similar to the torture that was formerly practiced by letting water fall on the head of the victim, drop by drop. No pain was produced and it could be ignored for a time, but the effect in the end was nervous collapse.

So, in this case, the nervousness may appear merely as irritability or restlessness, or it may become St. Vitus dance, or even epilepsy of certain kinds; and in severe cases it may result in complete mental breakdown. Fortunately, these results are rare; but the cause and effect are directly connected, as proved by cures when the cause has been removed.

Teeth are sometimes fully formed and yet are held within the bone for years, because the bones have not grown large enough to accommodate them. These are known as "impacted" teeth, and are frequently found in cases of so-called "crooked teeth." No matter how long they have been there, or how little pain they may give, they are a constant menace to the nervous and mental health. You have heard of some old person who, having lost all of his teeth, begins to cut his third set at the age of eighty, perhaps. There is no third set. It is merely some of the second set that have been impacted all these years, and now are finding room to obey the impulse to erupt.

The X-ray will reveal these hidden teeth, and correction of crooked teeth in early childhood will, as a rule, prevent impactions unless there are extra teeth, or the tooth germ itself badly misplaced. The branch of dentistry that treats crooked teeth is known as "orthodontia".

In the treatment of these cases there are many things that will aid in prevention, and they are suggested by the early causes that are responsible for or contribute to poor development.

Home treatment should start before the baby is born, by careful attention to the diet of the mother, and continued through the nursing period.

Breast feeding is essential to the proper development of the child, because the mother's milk normally contains some elements not yet fully recognized that no substitute of cow's or prescription milk can supply, — an element that markedly influences growth.

After weaning, the diet should be sufficiently varied as to supply all the demands of the body for its different tissues, and should finally include milk, cereals, meat, fish, fruit, vegetables and bread made from the whole wheat.

Watch for faulty habits and correct them at once, particularly sucking the thumb or mouth breathing. Notice if the child sleeps with his mouth open. If he does, have an early examination for adenoids.

As soon as the teeth appear, thorough mastication should be taught, and that is best done by example. Make the mealtime happy and leisurely.

Start the habit of mouth cleanliness early and begin the regular visits to the dentist, so that he can educate the child and do real preventive work in care of the teeth. Attention to this one thing will absolutely prevent many cases, and render those due to other causes much less complicated.

All the money spent on the care of the child's mouth up to the age of twelve is worth one hundred times as much as that spent later in repairing the results of disease.

Every child, at the age of five at least, should be examined for evidences of irregularities, and, if present, correction should start at once.

Prevention is greatly to be preferred to later correction, not alone because the result is more sure and complete, but because in the young cases there is no need to produce any pain whatever, and there is a complete absence of nervous effect from the work. In fact almost every case of crooked teeth exhibits some degree of "nervousness" beforehand, which disappears as soon as a measure of growth has been secured to relieve the crowding. Once it has fairly started and become positive enough to be diagnosed, it will tend to become progressively worse all through life. It never tends to improve.

Early treatment offers the only complete and certain help, as the complications increase rapidly and the difficulties of treatment even more so. It is a great mistake to wait until twelve years, because by that time nature has stopped trying to build up the face in certain respects, and will not respond fully to the stimulus that is reasonable to apply.

The appliances used to-day are very small and delicate, and use only a very gentle force to stimulate the natural processes of growth. The work is necessarily slow because nature works slowly. Full co-operation of the patient is essential, in cleanliness and in following instructions as to diet, exercises, etc.

The results to be looked for, aside from the improvement in facial appearance, are greater efficiency in chewing and the resultant better digestion, which in turn is reflected in the raising of the physical tone and vigor of the whole body. With normal breathing the lungs get a greater capacity and the blood stream becomes richer.

Correction of crooked teeth removes many possible causes of serious organic diseases and nervous irritation.

DENTAL HYGIENE.

By William Rice, D.M.D., Dean, Tufts College Dental School.

NATURE has protected the teeth by furnishing for their outer covering the hardest substance to be found in the body. Yet the incidence of infection, leading to ultimate loss, is greater than in any of the body tissues. A knowledge of nature's agencies for defence, and the means at hand for reinforcing them, should be a matter of common knowledge.

The proper development of the teeth is largely a question of nutrition, and the diet of the prospective mother as well as that of the child is of supreme importance. The most universal food and the one containing in itself all of the three nutritive constituents, viz., proteids, carbohydrates and fats, is milk. Milk is also the richest of all articles of diet in the calcium content, this being an element of great importance in the development of the bones and teeth.

Foods rich in vitamines, which are of two types — some soluble in water and some in fat, — are of undoubted importance in promoting normal development of the teeth. Vitamines are found in the husks of natural grain, in the leaves of green vegetables, in fruit juices, in butter, olive oil and other natural fats.

The mineral content of milk is sufficiently high to give it the first place as a bone-building food, and as the teeth require practically the same elements for their proper development it is of equal importance as related to them. The infant requires about one-third gram of lime daily, and this amount is supplied in milk. A deficiency in lime may lead to softening of the bones and imperfect development of the teeth. So necessary are the mineral substances in maintaining the fabric of the various tissues that death ensues if the supply is entirely cut off, even though the other constituents of diet are supplied in normal amount. The refining process to which many of the cereals are subjected in the manufacture of flour has the effect of depriving the grain of its mineral substance.

The mineral content of foods during gestation should be carefully considered in the dietary of the prospective mother, as the proper nutrition of the developing fetus is essential in the formation of enamel. On the other hand, the development of the dentin, cementum, and alveolar process takes place in a large measure after birth and continues throughout the life of the individual; hence, proper nutrition in infancy and later life is essential for the upbuilding of these tissues.

I would lay great stress on the habitual use at each meal of foods selected not only on account of the nutrient qualities, but also because they require sufficient masticatory effort to make vigorous exercise necessary in the performance of this function. The benefits of thorough mastication have been popularized by Mr. Horace Fletcher until Fletcherism has become a household word, and I am convinced that the beneficial results are far more reaching than even the most ardent advocate realizes. In the first place there is an invigorating effect upon the supporting structures of the teeth. Vigorous mastication gives the necessary stimulation to the peridental membrane, which being richly supplied with blood needs this stimulation and functional activity for the maintenance of tone. There is an increase in the flow of saliva, and exercise is afforded for the muscles of mastication. The passing of the food materials over the teeth cleanses their various surfaces and massages the gums.

Insufficient study has been given to the function of the gums, and occasionally even the dentist, in the performance of restorative operations upon the teeth, has been negligent in his care of these delicate structures, which is one of protection. This tissue hugs closely the neck of the tooth but is not attached to it. Any injury to this free tissue affects seriously its protective function and exposes a vulnerable portion of the tooth to the acid-forming bacteria, while crowding it down affords a favorable place for the impaction of food material. This condition frequently leads to the formation of a pocket which, becoming infected, gradually destroys the supporting structures of the teeth, causing their loosening and eventual loss. The hygiene of the gums should command the closest attention of the dentist and the co-operation of the patient. In many cases the removal of the deposit from the surface of the tooth immediately under the gum will be sufficient to relieve an existing inflammation. This treatment should be followed at stated intervals by gentle massage with the finger; the stimulation to the circulation will be sufficient to restore these tissues to a normal state of health and resistance. The gum should receive treatment in every performance of the toilet of the mouth and teeth. Gentle stimulation by proper brushing goes far to maintain firmness of texture and freedom from circulatory congestion, the prime factors in the health of supporting structures of the teeth.

Inflammation of the gums is frequently caused by injury from the crowding of food materials into the interproximal spaces on account of faulty proximal contact due to malposition of the teeth or loss of proximal contact from the beginning of decay. The impacted food material first presses away the septal gum, following this, putrefaction and fermentation take place. The soft tissue thus infringed upon and injured loses its tone and becomes an easy prey to the micro-organisms of infection. When the septal tissue is pressed down by the impaction of food material a pocket is formed and an infection of the underlying structures soon takes place. The peridental membrane covering the root of the tooth is invaded and destroyed and its loss is followed by infection of the porous cementum covering the dentin of the root. Infected cementum, unlike necrotic bone, will not separate itself from the healthy tissue, and nature has made no provision for its repair after the loss of the peridental membrane. It therefore becomes a dead septic area insusceptible to remedial treatment. If the destruction of the peridental membrane is limited in extent, it may be possible by proper instrumentation to remove the septic portion and establish a new line for both the gum and peridental membrane; then by exercise of extreme care by the patient and frequent attention by the dentist the progress of the destructive process may be checked.

The rôle played by the saliva is also a very important one among the defensive or protective agencies, and its presence and constant renewal tends to maintain the normal environment of the teeth and to overcome by its neutralizing effect the harmful action of fermentation. In general terms it may be stated that the saliva is composed of water, albumen, mucus, ptyalin and the salts of potassium and sodium held in solution. The proportions vary in different individuals at different periods of the day. The amount of its different components will be affected by the physical condition of the individual and by the kind of stimulation inciting its flow.

Cannon has shown in his experiments on animals that the digestive fluids are greatly influenced both in amount and composition by the mental state of the animal. The mental impression produced by the sight or odor of food also has a similar effect. The old saying that a certain food makes the mouth water has its basis in fact. The mere thought of savory food or acid fruits is sufficient to stimulate the glands to increased functioning.

Saliva varies, also, in its physical characteristics from a thick, viscid, mucilaginous substance rich in albumen and mucus to a thin watery fluid containing small quantities of colloid material. Carbon dioxide is always present in the saliva as in the blood and other body fluids.

The action of the ptyalin content is to convert starch into sugar during the process of mastication. Thorough mastication is essential to obtain the full effect. The sense of taste will quickly detect the change taking place, the sweet taste increasing as the chemical action proceeds. According to Black the ptyalin has a still further function in freeing the surfaces of the teeth and the embrasures of the clinging particles of starchy foods which remain after the mass has been swallowed. Pickerell also suggests that the principal function of the saliva is the hydrolysis of the starches.

The function of mucus in the saliva is largely a mechanical one. It lubricates and makes slippery all the surfaces of the tissues. It coats the teeth and imparts to their surfaces a smoothness and softness not otherwise obtainable. During mastication it mixes with the food and prevents it from sticking to the surfaces of the teeth, gums and mucous membrane of the mouth. It aids in forming the bolus of food, which makes easy the act of swallowing. A deficiency in the amount of mucus will be evidenced by difficulty in the management of food in the process of mastication.

The water of the saliva acts by its presence, bathing the surfaces of the teeth, this action being promoted by the movement of the muscles of the cheeks and tongue, by which it may be forced through the interproximal spaces or drawn through by the action of suction. The habitual use of this function as a regular exercise in performing the toilet of the teeth may be of marked benefit.

Thorough mastication also influences not only the quantity and quality but the composition of the saliva. The alkalinity of the saliva is dependent upon its ash content, and with an increased flow brought about by the stimulating influence of the exercise of mastication the ash content is increased and consequently the alkalinity proportionately raised. It has been shown by Pawlow that glandular secretions have the property of adaptation; in other words, the degree of alkalinity is largely influenced by the character of the food to be acted upon. In periods of physiologic rest the saliva is weakly alkaline and the quantity secreted is only about 1 cubic centimeter per minute, this amount being greatly increased during the period of active functioning, the increase depending largely upon the nature of the food material. It is interesting to note that in cases of dry mouth the teeth quickly crumble away. A marked increase in caries is usually noted in any pathological disturbance of glandular activity. Prinz states that "the quality of the secreted saliva is the sole factor which governs environmental phenomena concerning tooth decay."

We have stated that caries of the enamel is largely due to the retention or confinement of food material in locations favorable to its remaining undisturbed for a sufficient period of time for fermentation to take place. This being the cause of the formation of cavities and decay, it is obvious that if this food material can be removed before the bacteriological action takes place, the dissolution of the tooth substance will be prevented. With the most scrupulous care it is impossible entirely to prevent caries in highly susceptible mouths where it is very active, but the frequency of occurrence may be greatly lessened. After five years' supervision of the school children in the city of Bridgeport, Fones reports that caries has been reduced from 30 to 60 per cent in the various schools. The children were carefully drilled in the use of the toothbrush, and home care was insisted upon. In conjunction with this, frequent prophylactic treatment by the dental hygienist was given.

We believe that the care of the teeth should begin as soon as the child is put upon a mixed diet, and even before this if there are evidences of accretions upon the surfaces of the teeth. The brush should be of suitable size to suit each individual case, not too large to pass between the lip and cheek and the surfaces of the teeth, and with the bristles neither so stiff and resistant as to cut the soft tissue nor so soft as to be ineffective in the removal of soft material. Prior to use the new brush should be soaked in boiling water. No definite method or rule can be made for brushing these teeth. The parent or nurse must take care that it is done thoroughly without injuring the soft tissues.

As the result of experiments to determine the most hygienic method of caring for the brush the writer has found that a brush rinsed in water after using and then placed in a close receptacle developed many more bacteria than one which was rinsed in hot water and left in the air to dry. It is therefore advised that the brush be thoroughly rinsed in hot water after each use. The brush should be freed from water as much as possible by shaking and then hung in a place protected from the dust.

The use of dental floss is to remove any particles that may remain upon the proximal surfaces of the teeth after brushing or after eating when it is not possible to brush the teeth. The silk should be passed through the contact points and held closely to the surface of the teeth and carried upward or downward as far as the gingivæ. Care must be taken or injury will be done. If the contact point is close, the force used may result in the sudden passage of the floss and carry it against the soft tissues so roughly as to cause damage.

The toothpick is also used to clean the proximal surfaces of the teeth after eating. An orangewood pick with a smooth flat blade or a quill is to be preferred and care should be taken not to injure the soft tissues or push the gums away from the surfaces of the teeth. Too often people blindly and violently thrust the toothpick between the teeth, in an attempt to relieve some slight irritation, until actual bleeding of the gums is produced. Another vicious and unsightly habit is the prolonged use and chewing of the cheap wooden toothpick from which splinters are detached to irritate the membranes of the mouth and throat. The toothpick should be used privately, not publicly.

Prinz states that the sterilization of the oral cavity by any antiseptic which can be employed with safety is impossible. This being the case, the use of commercial preparations advertised to do this is not only useless but may be harmful, and their use should be condemned.

We have shown that the saliva possesses many of the desirable qualities of a mouth wash. The ideal mouth wash should be of a similar nature, with the addition of a germicide. The qualities of the mouth wash should be such that it will not irritate the soft tissues, that it will not destroy the salivary ferments, that it will be bactericidal, that it is not poisonous if swallowed. The wash should be readily available and inexpensive so that it may be used freely and without harm. The writer has for many years advised the use of salt and water for this purpose. Prinz has shown that physiologic salt solution reduced the oral flora by 50 per cent, and he advises the use of this solution with the addition of half an ounce of lime water to eight ounces of a salt solution. The lime water is mildly astringent and is a solvent of mucinous material. Fones advocates the use of lime water alone, and states that five cents' worth of coarse unslaked lime such as the masons use for coarse plaster, will keep a family supplied with the best kind of mouth wash for a whole year.

Tooth powders are largely used as an aid in mechanically cleansing the surfaces of the teeth. Much injury may result from the use of an abrasive material, and only the finest precipitated calcium carbonate should be used for this purpose. This may be combined with a small amount of soap and saccharine and flavored with one of the essential oils. A suitable powder may be made by thoroughly mixing a half-pound of finest grade English precipitated chalk with three grains of finely powdered saccharine, a half-ounce of powdered castile soap and 50 to 100 drops of oil of wintergreen or peppermint.

Pastes are made by adding gelatine or glycerine to the powder.

The use of slightly acid fruit as the last article of food to be eaten in a meal is to be commended for its efficacy in the removal of sticky particles of food and its stimulating effect upon the salivary glands, thereby promoting a free flow of saliva which quickly neutralizes the acid. The lunch which the child carries to school should contain an apple or an orange for dessert instead of the jam, cookies and sweets so often used.

It is of the uttermost importance that the growing child should be taken to the dentist for frequent examination. Beginning at the age of three years a careful inspection should be made at least every three months. This inspection should include not only an examination for cavities of decay, which should be immediately treated or filled, but also a study of the dental arches to determine whether normal development is taking place. Slight stimulation by properly directed but gentle force may be necessary to bring this about. If retarded development is discovered early, very little interference is necessary to stimulate growth, but if neglected the consequences may be serious. The treatment of incipient caries by the dentist by the use of nitrate of silver will frequently inhibit decay, and the necessity for filling the deciduous teeth may be avoided.

PREVENTIVE DENTISTRY.

By William Parker Cooke, D.M.D., Professor of Preventive Dentistry and Oral Hygiene, Harvard Dental School.

PREVENTION of pain and trouble appeals to every normal person whether young or old. It appeals especially to parents who desire for their children the opportunities they have not enjoyed or have neglected. When we consider what a wonderful apparatus we have in the mouth and teeth, and that the teeth are the mill that is to grind the food that is to build the body of a child from eight pounds to one hundred and twenty pounds or more in fifteen years or so, it is desirable that we keep this mill in good working order.

We apply oil to machinery to prevent friction and protect it from rusting by paint and varnish. We consider, apparently, that the organs of our body do not need any particular care. In a recent interview by the roadside with two boys aged five and seven an examination showed in the boy of seven nine large cavities in his teeth, a mouth very dirty and the teeth covered with a coating of sticky food, no brush evidently ever used. The occlusion was normal in each boy, the teeth meeting each other in such a manner that the chewing process could be well done. When you consider that in less than four years since these temporary teeth had arrived so much decay had taken place that the process of chewing was largely impaired and the liability of toothache very imminent, you must realize that the child has been neglected. With the present condition of neglect his permanent teeth will be decayed and many of them lost before this boy begins to earn his living at sixteen years of age. The factors to be considered are, first, tooth structure; second, food; third, care. In a normal set of teeth there are from thirty to forty places that are called original defects or fissure cavities. This is the class of decay in which dentistry can promise the patient absolute cure if these defects are filled early enough. If filled when small there is very little loss of tooth tissue and the fillings are very permanent. Most of these defects occur on the grinding surfaces of the teeth. The other decay is due to neglect, to the decomposed food left between and around the teeth. The cavities produced by this cause are more difficult to remedy as the conditions that produced the decay in the first place are very liable to continue, while in the cavities from original defects, the cause is remedied when the tooth is filled. Food has much to do with decay, and a diet with a large amount of sweets helps decay. The more sugar, the more decay. Free sugar, as in candy, etc., is a frequent cause of decay of teeth. The parent or relative, by allowing the child candy and feeding him soft, sweet food, produces an abnormal appetite for sweets so that the taste of real food does not appeal to the child. The child also lacks resistance to tooth decay, as the elements that produce the best tooth structure are lacking in his food. So we see that the decay of the teeth is not a simple matter as the loss of grinding surface due to decay lowers the dental efficiency of the child. Care is the only remedy. This care will not be given unless the parent and the child appreciate, at least partly, the value of the apparatus they are to preserve. A tooth once lost is not replaced. Tooth decay has been called the disease of the people. In modern civilized communities we find 85 and 95 per cent or more of the people are suffering from it. The Eskimos have the lowest percentage, some two and three per cent of their teeth being decayed. Their diet, which lacks sweets, accounts for this. In other tribes where the percentage of decay was low it has increased to about the same figure found in our country where these children have been living by the so-called civilized methods. The young suffer most, as the tooth structure is not as firm as later in life.

The results of examinations of school children's teeth show very bad mouth conditions. We do not need to spend time and energy in making examinations for record purposes as the results are uniformly bad. What can be done to help this condition? Without the co-operation of parents and children little can be accomplished. The public lectures and demonstrations by school nurses and teachers will arouse the desire in the pupil for a healthy body. The desire to escape pain will also help. The problem must be attacked from the preventive side. It is hopeless to try to remedy it by repair dentistry alone. If a child is left to himself he will not care for this teeth; he will become largely deficient in his dental apparatus and will, in addition to the lack of chewing surface lost, be liable to an acute attack of pain from toothache. He will also have started conditions of his teeth and surrounding tissues that later will be a menace to his health. These troubles are cumulative, and after-treatment later in life will not remedy early neglect. If a child thus let alone will reach such a disastrous result, what should the parent or guardian do for the child to prevent trouble?

A child has a right to start life with a fair opportunity for success. In the case of the original defects or fissure cavities in the teeth no care by the child will prevent decay. So the parent should have these cavities, which come in temporary and permanent teeth, filled while they are still very small. Since the child will use the temporary set usually till he is nearly twelve years old, it is essential that these be filled. As the child should not suffer pain from decayed teeth and as he will form habits of partly chewing his food because these cavities will prevent proper mastication, the parent should have the dentist inspect the child's teeth at regular intervals. The parent can see if the teeth are being brushed properly. By placing the child in front of a window this inspection can be thoroughly done if the lips and cheeks are drawn back. The child will also do better cleaning work if he is allowed to see the condition of his teeth by using a mirror. At the time the inspection is being made, condition of gums, tongue and teeth should be noted. It is what the child does for himself that counts. No amount of cleaning by a dentist or by the parent will help much without the co-operation of the child. The preservation of the teeth can be accomplished only by the same means that the preservation of health in other organs of the body is effected, that is by the intelligent use and care of these organs. The child must be taught their use and care, just as a person must be taught to use and care for an automobile or any other machinery. After the mechanical defects before mentioned have been remedied, the child will still be very liable to dental decay from the accumulation of food around the teeth. Warmth and moisture are present; the food packs between the teeth and is not disturbed, thus furnishing the best conditions for germ life and tooth decay. Cleansing directions are simple. Brush the teeth, gums and tongue after meals and remove the food from between the teeth. Rinse the mouth with lime water or salt water. Avoid eating between meals and the eating of candy. A person who brushes his teeth only once a day, say in the morning, goes with a dirty mouth all day. Part of the food eaten for breakfast, for instance, remains to ferment. If the teeth can be brushed only twice a day, do it after breakfast and at night. The greatest amount of decay occurs at night when the mouth is quiet. A healthy body with a good mind and moved by a helpful spirit is the best human product. It is very essential that the gateway to this body should be healthy. This health is possible to the person who is willing to pay the price for it. Adequate instruction and common-sense care are the price of success.

THE PATHOLOGY OF DENTAL INFECTIONS IN CHILDHOOD.

By Kurt H. Thoma, D.M.D., Assistant Professor of Oral Pathology, Harvard Dental School.

PREDISPOSING causes of dental infection can be traced back to the period of fetal development. The calcification of the tooth germs of all the twenty temporary teeth begins between the sixteenth and seventeenth week of prenatal life, and at birth the enamel of the temporary incisors is entirely formed, while that of the temporary molars is from one-half to two-thirds complete. The supply of proper salts and vitamines through maternal blood is, therefore, of greatest importance, and, if insufficient, results in soft, unevenly calcified teeth. The first permanent molars start to become calcified the twenty-fifth week of embryonic life, but the remaining permanent teeth do not begin until after birth.

The development of the teeth is seriously interfered with by all diseases affecting the epithelial structures. The infectious fevers and syphilis always leave their mark on the teeth, as do also chemical poisons, such as mercury, and bacterial toxins from acute and chronic infections, no matter whether they circulate in the mother's blood before birth, or whether they occur later independently in the child. Nutritional disturbances affecting calcification cause abnormal formation of the enamel, as well as of the dentine. Large parts of the dental tissue may remain uncalcified and can easily be recognized in microscopic sections. It is evident that bacteria find this uncalcified matrix a better medium upon which to live, and that decay therefore progresses much more rapidly than it would in a completely calcified tooth. It is also generally conceded that the use of free sugars with meals and between meals is one of the most important causes of dental caries, not only on account of its local action (furnishing food for the lactic acid producing bacteria of decay), but also through general saturation of the fluids of the body with glucose and the absorbed products of fermented surplus glucose from the intestines.

Clinical observations made by several investigators show that the people of certain nationalities have better and stronger teeth than others, although frequently they do not even use a toothbrush. This is especially true of the Eskimos, African negroes, American Indians, New Zealanders and other inhabitants of the South Sea Islands, as well as certain classes of Italians and natives of the Balkans. The diet of these people consists of coarse food, vegetables, fruits and starchy foods. The sugar consumption in Italy is 13 pounds per person a year, in some of the Asiatic and African countries the percentage is very much less, while in this country we consume over 90 pounds of sugar per capita a year. In my practice I have a few children who have been brought up on a sugarless diet and they have most beautiful, strong, sound teeth, while others who had the same dental care have teeth which are so susceptible to decay that they almost crumble away.

Caries, which starts in the fissures of the teeth on unclean enamel surfaces, progresses very rapidly as soon as the dentine is reached, as the bacteria find more nourishment here. The infection starts along the dentinal tubules and finally reaches the dental pulp. In temporary teeth pulp infection frequently occurs without causing any pain, because of the nerve supply having been cut off by absorption of the roots. In permanent teeth we may either get an acute infection of the pulp, with a great deal of pain, or a chronic infection. A frequent condition in children associated with the latter is hypertrophy of the pulp. In such cases the pulp presents a picture of chronic inflammation. On account of wide apical foramina the blood vessels are not strangulated, as in the adult tooth. New formation of tissue takes place and the pulp grows out of the pulp chamber into the cavity of the tooth, where it can be recognized as a reddish piece of flesh in the center of the tooth. Pulp disease is only an intermediate stage in this pathological chain. Infection of periapical tissue soon sets in, causing either active suppuration, with all the symptoms of acute inflammation, or a chronic infection of the proliferating type. The first is generally called acute alveolar abscess, a suppurating ostitis which usually terminates in a periostitis and fistula on the gum or face. The latter causes a granulating ostitis, without symptoms and progressing slowly, but causing bone destruction and infection of the apical end of the tooth. This then presents the same condition as necrosed bone. Nature makes an attempt to eliminate the tooth root, which has become an obnoxious foreign body, by osteoclastic absorption, so that often a large part of the root apex disappears.

The effects of this chain of dental infection so frequently found in children, which starts as caries and ends as bone disease, affects the general health by derangement of the masticating apparatus and absorption of toxins and bacteria.

Derangement of the Masticating Apparatus.

Fones,[1] whose excellent work on mouth hygiene in connection with the public schools in Bridgeport, Conn., has attracted much attention, found that malocclusion of the teeth was present in 98 per cent of the children, 6,768 children of the first and second grades having been examined. Besides improper feeding in early childhood and pernicious habits, such as thumb-sucking, the use of pacifiers, mouth breathing, etc., the greatest factor, perhaps, is infection. The loss of tooth structure from decay and the loss of the tooth itself on account of abscess conditions nearly always cause irregular eruption of the permanent teeth. If there are many teeth with deep cavities in a child's mouth, mastication becomes painful. The lack of force applied results in underdevelopment of the jaws. The same condition occurs if the diet of the child contains no hard, coarse food. If the diseased teeth are on one side only, all the chewing will be done on the other. This results in unilateral development of the jaws, the facial bones and the brain case. A frequent result is nasal obstruction and adenoids. Dr. Baker [2] of the Harvard Dental School made some interesting experiments with young guinea pigs, rabbits and dogs. He extracted all the teeth on one side so that they were forced to masticate on the other side entirely. In all cases the result was underdevelopment of the head on the affected side.

Derangement of the masticating apparatus may also have a more profound influence on the general health, especially causing digestive disturbances, due to improper mastication. Gastric and abdominal pain, fetid diarrhea with undigested food in the stools, night terrors and fretfulness, may be mentioned as symptoms in this connection.

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[1] Fones, Alfred C.: "Report of Five Years of Mouth Hygiene in the Public Schools of Bridgeport." Dental Cosmos, July, 1919.

[2] Baker, Lawrence W.: "A Preliminary Study of the Influence of the Forces of Occlusion on the Development of the Bones of the Skull." Dental Items of Interest, February, 1911.

Infection from the Teeth in Relation to the General Health.

The fact that diseased teeth and infections connected with them are extremely common in children makes it very difficult to study their etiological relation to other diseases. There are many cases on record where remarkable results were obtained after the removal of septic teeth, and there is no doubt that systemic infection may originate from the jaws just as well as from the tonsils or any other part. I believe that in a large number of cases dental infection is only coexistent, but without doubt should always be eradicated, both from a dental as well as a medical point of view. Frequently, however, dental infection is not discovered in a general examination. Decayed teeth and fistulæ discharging pus are easily recognized, but the more important chronic infections which develop at the end of the root and give no symptoms nor signs, but frequently contain pure cultures of streptococci, cannot be diagnosed except by careful Röntgen examination.

The removal of septic teeth quite often has a beneficial effect in an indirect way, by removing a source from which there is a daily absorption of toxin which had to be taken care of by the protective forces of the body. This is well illustrated by the following case of endocarditis, a former patient at the Robert Brigham Hospital. The history, according to the hospital record, is as follows: —

The patient, hospital case No. 116, aged thirteen, had measles when very young and scarlet fever seven years ago. He had never had any sore throat. Seven years ago he started to have pain in the joints, mostly in the shoulder region, associated with fever. Shortly afterward he complained of pain over the precordia and of dyspnea upon exertion. He was kept in bed except for meals. Physical examination showed lungs negative, heart apex visible and palpable in fifth interspace, 11 centimeters from the midsternum; over the apex was felt a distinct presystolic thrill; sounds were of fair quality, but rapid; at mitral area was a diastolic murmur and over pulmonic area was a systolic murmur. Patient was admitted to the hospital November 6, temperature 100.6° F.; pulse, 140; respirations, 28; blood pressure, $\frac{125}{80}$. He was put on a light diet and kept in bed. X-rays taken of his teeth showed abscesses at the roots of two lower first molars. I extracted the first on December 11 and the other on December 14, and after this the temperature was only three more times over 99° F. in December, and in January it was never up to 99° F. From the time he was admitted until the time when he received dental treatment, December 11, the temperature was quite frequently above 99° F.

Prevention.

The most important duty of the dentist to-day is the teaching of mouth hygiene and the prevention of dental infection. A great deal has already been accomplished both in public clinics as well as in private practice by regular monthly prophylactic treatment by properly trained dental hygienists. The regular visits of the child for this purpose also facilitate the discovery of small cavities, which can then be attended to before a large portion of the tooth has become involved. But the elimination of dental decay, the primary cause of dental infection, is also dependent on correct feeding of the child from the time when other food is substituted for milk, and the elimination of free sugar is one of the most important factors.

THE COMMONHEALTH.

Bimonthly Bulletin of the Massachusetts Department of Public Health.

Sent Free to Any Citizen of the State.

Merrill E. Champion, M.D., Director of Division of Hygiene, Editor.
Room 546, State House, Boston, Mass.

Mouth Hygiene and the Child Health Program. — Mouth hygiene is one of the newest recruits to the ranks of the public health movement, and one of the most promising. It has not as yet entirely found itself, however, but will undoubtedly do so before long.

But a few years ago few foresaw the present scope of public health activity. The control of nuisances and of communicable disease represented its sum total. Then appeared gradually an appreciation of those forces which tend to produce inefficiency rather than loss of life. It was recognized that a child might escape fatal illness and yet suffer crippling disabilities which would render him unfitted to do his share of the world's work. It was then that mouth hygiene began to loom up as an integral part of public health protection.

Mouth hygiene is to a great extent a problem of child hygiene. It is in childhood that the foundation is laid for the sort of dentition which in adolescence and adult age serves the purpose for which it was intended and is not a menace to its possessor. For the present, at least, the school will be the chief feeder of the dental clinic or the family dentist. With the development of health centers, moreover, to which children of all ages will be brought, more and more will attention be focused on children of the preschool age, and then we shall have a maximum of prevention with a minimum need of cure.

There is urgent need at the present moment of co-ordination of mouth hygiene with other forms of public health work. Too many dentists and too many physicians prefer to patch up the damaged human being rather than to assist in keeping him whole. The dental hygienist is a new factor appearing in the prevention field, and there is still danger that she will be led away from her true function as an educational agent and end up in being merely an adjuvant to mechanical dentistry. On the other hand, there is danger of overemphasis on the wonders of preventive dentistry to the exclusion of attention to underlying factors in bodily health, such as adequate nutrition.

It is to be hoped that to an increasingly marked degree we shall see dentists and dental hygienists joining the ranks of public health workers, taking their places beside the sanitarian and working under or in co-opération with the community health officials. Only when health officer, public health nurse, nutritionist, mouth hygienist and other educators of public opinion in respect to health are working hand in hand as one group shall we see proved fully the truth of the old adage that "an ounce of prevention is worth a pound of cure."

X-ray in Dentistry. — A few years ago the X-ray was considered in the light of a fad in dentistry, but to-day we have awakened to the fact that it is a real necessity.

The important discovery that abscesses on the roots of the teeth may be the cause of various systemic diseases has brought about great changes in the practice of dentistry. Before the advent of the X-ray, a tooth was not considered defective unless there were symptoms of pain and inflammation present. If a tooth was tapped with an instrument and it gave no sensation of pain, it was considered normal.

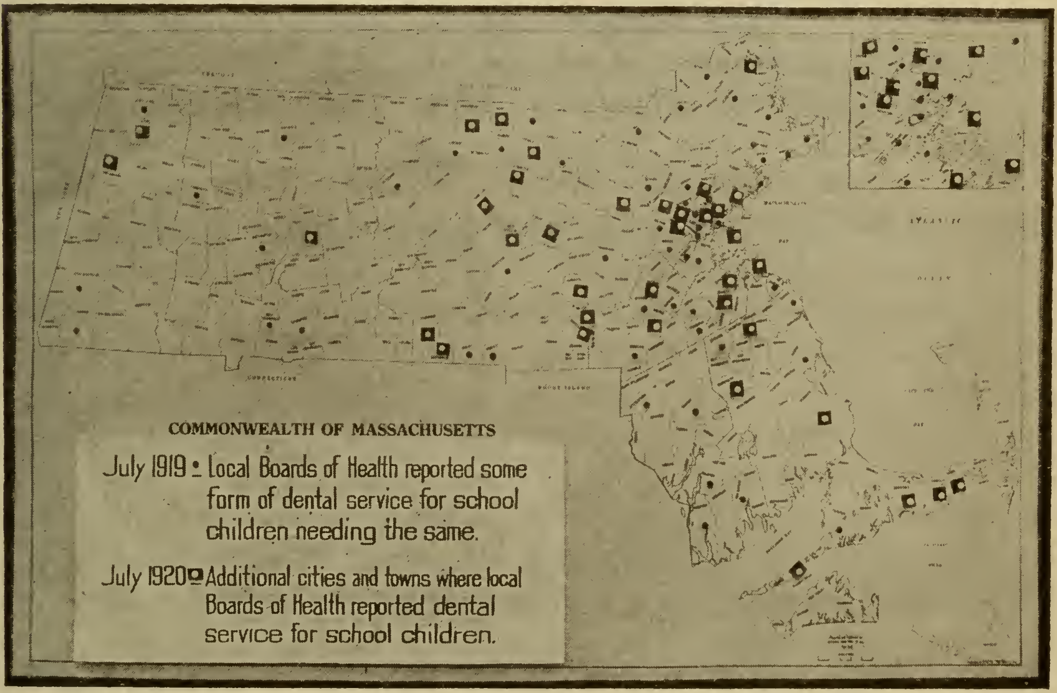
The mouth is frequently the seat of chronic disease which exists for a long time without giving local symptoms. The patient, experiencing no discomfort, is usually unaware that abnormal conditions prevail. Through the X-ray we have learned that the largest abscesses often give no indication of being present. The crowns may present a perfect appearance yet the X-ray reveals serious conditions present at the roots of the teeth.

X-ray examination is absolutely necessary to ascertain the condition of devitalized teeth, or the presence of unerupted teeth. A correct diagnosis of a patient's mouth cannot be obtained otherwise.

Arthritis, or rheumatism, endocarditis, or heart disease, neuritis, or inflammation of a nerve, nervous breakdown and blindness have all been traced to abscessed teeth. These teeth are extracted or treated, and the various disorders disappear.

Of course there are cases where defective teeth have been extracted and no improvement in the condition of the patient is evident. However, since the teeth are a fertile source of infection, we must make a thorough X-ray examination in order to eliminate them as a possible factor. — E. A. KINLEY, Jr., D.M.D.

A Survey of the Dental Facilities in Massachusetts. — In 1919, when mouth hygiene became an additional activity of the Division of Hygiene of the Department of Public Health, a questionnaire was sent to the local board of health of every city and town in the State, asking if that community had a school dental clinic or any other means of providing dental service for school children needing the same. Only 53 affirmative replies were received, showing that an alarmingly small proportion of the 354 cities and towns in the State realized the importance and necessity of mouth hygiene in a community. Most of the places having clinical service of any type were, as shown in the accompanying map, in the vicinity of Boston, the Cape section, the middle and western parts of the State being deplorably neglected.


COMMONWEALTH OF MASSACHUSETTS
July 1919 • Local Boards of Health reported some form of dental service for school children needing the same.
July 1920 ◘ Additional cities and towns where local Boards of Health reported dental service for school children.

A year later another questionnaire was sent out, the replies showing an addition of 37 communities to the original 53, making a total of 90 communities having dental service.

The type of service varies greatly and is inadequate in many cases. In Middlesex and Worcester counties many towns are reached by traveling clinics operated under the auspices of the respective Farm Bureaus. Several communities near Boston depend upon dental infirmaries in the Hub, while other towns arrange for a local dentist to care for the teeth of the needy children and for a local organization to meet any deficit in the dentist's remuneration; in other places there is a well-organized school dental clinic.

The middle and western parts of the State still need help. The problem presented there is quite different from that in eastern Massachusetts where the work is on a philanthropic basis. Inaccessibility to dentists and the lack of dentists in rural communities is the problem in the mountain and valley sections of the State. In this the dental colleges can help by presenting dentistry not only as a means of livelihood, but also as a vital humanitarian problem.

Every community should have dental service for its school children. Every community can have it. Every community would have some form of dental service if everyone in every community realized that it has been proved that the children are benefited physically, mentally and morally by being taught to practice mouth hygiene, that the communicable disease rate is lowered, and that fewer children have to review their grades. Whatever money is spent for this service is returned indirectly.

What is your community doing? — EVELYN C. SCHMIDT, Health Instructor in Mouth Hygiene, Department of Public Health.

SOME THINGS EVERY ONE SHOULD KNOW ABOUT THE MOUTH.

By Samuel A. Hopkins, M.D., D.D.S.

THE reason so many people neglect the first teeth of their children is because it has never occurred to them that their temporary teeth are important enough to bother about.

The object of this little brochure is to correct this error by showing how necessary it is to the child's health and comfort that these teeth be kept sound and clean until the second teeth come to take their places.

Many parents do not realize that when these teeth decay badly they ache just as severely as do the permanent teeth under similar conditions. If it were only to prevent suffering, the care of the first teeth would be well worth while. If, however, the teeth become decayed, they become painful to chew upon. Heat, cold, sweets and acids frequently cause severe pain, and the pressure of food between broken-down teeth is most uncomfortable. Consequently the child avoids chewing. He swallows his food hastily and without mastication. Unless we are all wrong in supposing that well-chewed food is more easily digested and more nutritious than food that is swallowed whole, one can easily see how decayed teeth interfere with a child's growth. When we remember how important for the child's development is the period between the ages of two and ten, we begin to realize the value of the first teeth.

To make a slight digression at this point it may be said that most children naturally eat slowly. Try feeding a very small child and see if this statement is not true. Children are taught or forced to eat rapidly not always because of painful teeth but sometimes because they are criticized and reprimanded at mealtime for all the sins of commission and omission that have happened during the day. They hurry their meal in order to make their escape and find more agreeable company. The American breakfast is too apt to be a hurried meal, and children soon learn to keep pace with their elders. Every meal should be a delightful occasion with all hurry and trouble set aside for the time being. If this could be insisted upon there would be less indigestion and children would attain a better growth.

To return to the subject of temporary teeth. When a first tooth decays far enough it is said to die, and this dying process is usually followed by an abscess. This means that pus is formed and is swallowed by the child or worse still is absorbed directly into the circulation. There can be only one result. The vitality of the child is lowered or, in other words, he becomes more susceptible to disease. There is no doubt of this. Experiments on lower animals have furnished the exact proof. Sound teeth help to safeguard the child against disease.

An unclean mouth with broken-down teeth in which food lodges provides an excellent field for the development of bacteria. It is a well-established fact that the germs of many diseases find in the mouth, tonsils and adjacent tissues the very best if not the only field for their growth. Pneumonia and diphtheria are examples, and many diseases of children have their origin in germs developed in the mouth. It needs no stretch of the imagination to believe that a clean mouth and well-cared-for teeth are helpful in preventing the spread of disease. Wherever the use of the common drinking cup in public schools has been given up there has been a surprising reduction in the number of cases of scarlet fever, diphtheria, measles and other so-called diseases of childhood. If proof were necessary this would show conclusively that many infectious and contagious diseases are spread from mouth to mouth, and the suggestion that an unclean mouth is a hot bed of disease would be confirmed.

While it is not strictly true that the condition of the first teeth influences the growth of the second, it is believed that the exercise of chewing brings the blood to jaws and face and assists in the healthy development of that part of the body including the teeth. If any part of the body is given reasonable normal exercise it usually develops and keeps in healthy condition; if neglected, it becomes weak. It would seem, then, that the outlines of the face may be altered by poor teeth and the failure to properly masticate. It is important to keep the first teeth in good condition so that when the second come through they will not come in contact with broken-down teeth, diseased roots and fermenting food. There is less danger of the second teeth decaying if, when they make their first appearance, they find a healthy mouth free from conditions which encourage weakness and disease.

This brings us to a consideration of the sixth year molars, possibly the most valuable teeth in the mouth and too often the most neglected. They are frequently, perhaps usually, mistaken for the first teeth. This error is due to the fact that they erupt usually when the child is five and a half or six years old, and that they come in behind the last of the first teeth and without pushing out or disturbing any of the set. Count the teeth carefully. There should be twenty in the first set, ten in the upper and ten in the lower jaw. If there are more you may be reasonably sure that the sixth year or first permanent molars have arrived. These are usually very large fine teeth, well suited to do a very large part of the grinding of food and capable of lasting a lifetime with proper care. If these are lost, the grinding surface is broken and can never be fully restored. Upon the position of these teeth and their relation to each other depend most dental irregularities. If you will ask the child to close the teeth naturally, and then draw aside the corner of his mouth, you will find, if the relation of the teeth is proper, that the lower molar is slightly in advance of the upper on that side, one-quarter of the width of the tooth would be about right. If this condition obtains on both sides and the jaw is of good size, there will never be any serious irregularity. If on the other hand the lower molars are seen to be in advance of the upper by as much or more than one-half the width of the tooth, there is grave danger of a protruding lower jaw; or if the teeth meet exactly opposite to each other, or if the upper teeth are found to be even slightly forward of the lower, an overprominent upper jaw or a receding lower jaw will probably result.

When either of these unnatural occlusions or relations of the sixth year molars is discovered, it is well to correct it as soon as the child is old enough or strong enough to have it done. If these teeth are brought into proper occlusion or relationship to each other at an early period serious irregularities will probably be avoided, for with these teeth in proper position the other second teeth are bound to come through in proper relation to one another unless the jaw is contracted or some unusual change takes place.

It is not difficult to appreciate the bearing of the first teeth upon the health and growth of a child, but few people think of the effect of the teeth on the intellectual and moral growth. How can a child study or keep his mind on his school work if his teeth are a source of almost constant irritation? How can a child be good when indigestion or lowered vitality from diseased teeth are unconsciously always nagging at him? Many a sweet nature has been changed by bad teeth.

In the State of New York, where records have been kept for many years, it appears that more children are absent from school because of toothache and illness due to diseased teeth than from any other cause. These absences cause the children to fall behind their classes, and so many children have to take an extra year in school that it is estimated that tooth trouble alone costs the State nearly $1,000,000 a year. It seems unnecessary to say more in order to convince people that the care of the teeth even at a very early age will well repay the parent and give the child a better, fairer chance to advance in life.

Take the child to a dentist at a very early age, but be sure he is a dentist interested in the care of children's teeth and in the prevention of dental diseases. Find, if possible, a young man whose hobby is prophylaxis or prevention. If he is the right kind of a man there will be no conflict, and the child will not suffer. If you cannot afford the usual charges for dental operations, do not hesitate to take the child to one of the dental infirmaries. There you will find everything scrupulously clean: the child will be treated kindly and the work done skillfully. Remember what has been said about the sixth year molars and watch them carefully from the day they make their first appearance and be sure that they are kept clean and well polished. Always remember that decay of the teeth is caused by an acid which is the result of food fermentation. Sweets and starchy food are especially active in producing this effect. Many of the starches and some of the sweets have little or no part in this destructive work, but if you wish to destroy a child's teeth you could find no surer way than by feeding him with candy and crackers, especially sweet crackers, between meals. If a child must be fed between meals it is better to give him a slice of bread and butter or a glass of milk or fruit.

Both young and old frequently excuse themselves for the unclean condition of their mouths by saying that they cannot find the time to clean their teeth. This is absolute nonsense. Provided you have a toothbrush and some water near at hand, you can brush your teeth after every meal and before going to bed and still not use up five minutes of the day. Put a watch beside you on the washstand and time yourself; you will be surprised to find that the time you have usually allotted to a cleansing of the teeth is not over a minute. If possible see that your child brushes his teeth after every meal and at bedtime. When the brushing becomes a matter of habit it is no longer a bore. On the contrary you feel distinctly uncomfortable when circumstances make it impossible to cleanse the teeth after a meal, and if you cannot brush the teeth before going to bed you are quite miserable. It does, however, take time and effort to form a good habit; but good habits formed early are not often given up. It is impossible to give a set of rules for teaching a child to brush and care for his teeth. If possible, do it without nagging. Make it a pleasant task and let there be a cheerful word or some slight reward for its perfect performance. The brush should be small and the tooth powder, paste or wash should be agreeable to the child's taste. Do not insist on a child using a preparation he does not like because some one has told you it was good for the teeth.

The tooth preparation which is best for the teeth is that which induces the child to cleanse them often. One is about as effective as another so far as their power to preserve the teeth is concerned. Directions for brushing the teeth and as to the use of floss silk in cleansing the teeth must be left to the dentist.

Whether in the infirmary or private office any worth-while dentist will take pleasure in carefully demonstrating just how a child's teeth should be cared for at home.

The object of this little paper is merely to show that such care will be amply rewarded.

THE IMPORTANCE OF DENTISTRY IN SANATORIA.

By Henry D. Chadwick, M.D., Superintendent, Westfield State Sanatorium.

ABOUT five years ago the Westfield State Sanatorium began employing a local dentist a half day a week. This plan was of considerable value as the acute cases could be attended to. The amount of work done in this limited time proved to be but a small part of what was really needed by the patients. It was, however, sufficient to demonstrate beyond question the value of dental hygiene as a necessary adjunct in the treatment of tuberculous patients.

Since April, 1918, a resident dentist has had an important place on the staff, and his whole time has been devoted to the patients. Systematic dental work has been done with all the children and with those adults who were considered hopeful cases. The adults with progressive tuberculosis have been given only palliative treatment.

Very striking beneficial results have been noticed with several patients following the clearing up of very foul mouths due to carious and uncared for teeth. The symptoms due to systemic infection cleared up rapidly and weight was gained very quickly. Fever, malaise, loss of weight and digestive disturbances are all common symptoms of tuberculosis, but it also must be remembered that they all may be caused by carious teeth and suppurating gums. These symptoms, with the physical signs present in healed and quiescent cases of pulmonary tuberculosis, may lead to an erroneous diagnosis of active tuberculosis, and the patient, who should go to a dentist, be sent to a sanatorium instead.

The examination of a patient with actual or suspected tuberculosis is not complete without a careful inspection of the teeth and mouth to locate a possible toxemia from that source. The diagnosis of early tuberculosis must frequently be made by exclusion of all other possible causes. In doubtful cases, instead of sending patients away or putting them on a strict régime at home, it would be better judgment to see that thorough dental treatment was first obtained. Occasionally, symptoms that simulate tuberculosis may disappear and health be regained by such a course. The following case illustrates the point I wish to make: —

Farmer, aged forty-two, gave history of having had several attacks of bronchitis. During the past year overworked. Lost 42 pounds from March, 1918, to May, 1918. During this time had fever ranging from 99 to 101 degrees for three weeks. Admitted to the Westfield State Sanatorium May, 1918.

Physical examination: Very poorly nourished; weight, 100 pounds. Color of mucous membranes, pale. Chronic double otitis media. Mouth in very foul condition. Nearly all his teeth carious and the gums suppurating and receding.

Examination of lungs showed impaired resonance to the third rib and middle of the scapula on the right side. Respiration roughened and a few râles after cough were heard near the spine of right scapula. Pulse, 90 to 100. Temperature, 99 to 100.

The dentist removed all the patient's teeth as they were too decayed to be treated and filled. The ulcerated gums healed with treatment. Patient's pulse and temperature afterwards became normal and he rapidly put on weight gaining 28 pounds in the fifteen weeks he remained in the sanatorium.

On discharge, the area of impaired resonance remained the same as found on first examination. His strength and color were rapidly being restored to normal.

This man's condition and symptoms were due to the suppurative condition of his mouth instead of from pulmonary tuberculosis. The fibrosis at the top of the right lung was from an old lesion and showed no signs of activity. If he had not neglected his teeth in past years he would have avoided this illness, and his doctor would not have made the mistake of sending the patient to a sanatorium for what was considered active, advanced tuberculosis.

Aside from the occasional errors in diagnosis caused by disregarding the fact that toxemia may come from neglected teeth in otherwise healthy individuals, there are numerous patients suffering from tuberculosis who have an added burden to bear due to septic absorption from decayed teeth. The reaction due to this condition causes fever, digestive disturbance, malaise and loss of weight, to be superimposed or to increase similar symptoms caused by the active tuberculous disease.

In the treatment of a tuberculous patient we must not fix our attention too closely on the lungs. We cannot hope to succeed by treating the lungs and overlooking the individual of whom they are but a part.

Dental work for children is very important aside from preventing toxemia, because caring for the teeth at a time when the second dentition is making its appearance may prevent malformation of the jaws and malocclusion.

Examination of ninety children under twelve years of age revealed the fact that but seven of them had had previous dental attention. That a sanatorium dentist may find plenty to do is shown by the following tabulation, which represents twenty months' work by one dentist at the Westfield State Sanatorium: —

Number of patients examined,	506
Prophylaxis,	470
Amalgam fillings,	980
Cement fillings,	780
Gutta-percha fillings,	85
Compound fillings,	150
Temporary fillings,	243
Pulp cappings,	200
Treatments,	119
Surgical dressings,	170
Devitalization,	27
Canal dressings,	174
Root fillings,	32
Extractions,	537
Total operations and treatment,	4,473

MOUTH HYGIENE IN THE BOSTON PUBLIC SCHOOLS.

By William H. Devine, M.D., Director of Medical Inspection, Boston School Department.

THE importance of the care of the teeth and its relation to good health are so generally appreciated that it is not necessary to discuss them at length.

This article will give an idea as to what the Boston public schools are doing in preventing and treating the decay of teeth, and embraces all the prophylactic measures, theoretical and practical, which are used.

As diseased teeth and surrounding tissues invite germs, mouth hygiene offers a fertile field in prophylactic medicine not only in preventing avenues of absorption of septic matter but in the controlling of disease from this source, especially in the incipient stage. With clean teeth the danger of dental caries can be reduced to almost nil. Early detection with prompt treatment may prevent suffering, loss of teeth, and deformity of the jaw which is sometimes permanent, and lessens the danger of contracting diseases which may be communicated through this source.

Formerly, little attention was paid to the teeth in early childhood. Now, as soon as the teeth appear, parents are advised to adopt preventive measures.

The experience of dental and medical professions and the sifting by scientific experiment have shown that decayed teeth may cause adenitis, rheumatism, etc., and that caries may impair general health and render the system susceptible to certain diseases.

The following is an outline of the principal methods of dental hygiene employed in the public schools of Boston: —

1. Instructions to school physicians and nurses.
2. Instructions by school physicians and nurses to teachers, pupils and parents.
3. Distribution of dental literature.
4. Toothbrush drills.
5. Referring for dental care to —
    (*a*) Family dentist.
    (*b*) Dental clinics.
6. School nurse accompanies children of lower grades to Forsyth Dental Infirmary and other dental clinics.
7. Advice to parents on home visits.
8. Lectures by dentists assigned by the Massachusetts Dental Hygiene Council.

Commencing with the kindergarten, the school physicians and school nurses aim to instruct the parents on the importance of the subject, and to impress on them that the care of teeth cannot begin too early. The school physicians and nurses give instruction to children, teachers and parents, with the result that their interest is awakened to the importance of caring for the teeth not only during school life but as soon as the teeth erupt.

At least once every year the director of the Forsyth Dental Infirmary instructs the school physicians and nurses on an outline which he recommends for the annual campaign. During the school year dentists, school physicians and principals profit by an exchange of views.

At the opening of the school year the director of medical inspection announces to principals that on request to the medical department a dentist will be assigned to give illustrated lectures on the care of teeth. Many school principals have availed themselves of this opportunity for valuable instruction presented in an interesting form.

Literature for the instruction of teachers, pupils and parents is distributed through the nurses. Teachers read and discuss these leaflets with the pupils.

Toothbrush drills, outlined by the director of the Forsyth Dental Infirmary, are directed by nurses. During the past year over four thousand of these exercises were conducted in classrooms.

The school nurse does follow-up work on dental and other defects. With 34,770 home visits by nurses, the opportunity presented for emphasizing the instruction given in school may be realized.

Parents are notified in accordance with chapter 502, Acts of 1906, as amended by chapter 257, Acts of 1910, and the following notice is sent: —

NOTICE TO PARENT OR GUARDIAN.

(DENTAL.)

In accordance with chapter 502, Acts of 1906, as amended by chapter 257, Acts of 1910, you are hereby notified that

has been examined. H   teeth need attention. You are advised to consult family dentist.

School Physician.

19 .

Boston is indeed fortunate to have the Forsyth Dental Infirmary. Hundreds of school children are treated at the infirmary each week. Mr. Forsyth has given encouragement and stimulus in other ways.

During the past year the infirmary awarded three banners for "All Dental Work Completed" to the first three classes of grades one, two and three. There were seventy-five certificates for "All Dental Work Completed" awarded by the same institution to other grades. The winning of a banner creates enthusiasm in the class, and exercises honored by the presence of the donor, Mr. Forsyth, add to the impressiveness of the occasion.

The director of medical inspection has advocated the transportation of children by busses from remote parts of the city to the Forsyth Dental Infirmary. The school committee have the matter under consideration, and it is earnestly desired that this important step in progress will soon be realized. The director of the Forsyth Dental Infirmary states that this would markedly increase the working capacity of the institution. It would allow the opportunities offered by the infirmary to be utilized to the best advantage. From a medical point of view it would be welcomed, as the danger of contagion to which the children are exposed traveling in crowded street cars would be eliminated.

The following institutions care for about 400 children weekly: —

Tufts College Dental School.
Harvard College Dental School.
Maverick Dispensary.
Boston Dispensary.
Salvation Army Dispensary.
Hull Street Dispensary.
Carney Hospital.

The following table indicates the prevalence of defective teeth in schools: —

School Year.	Number examined.	Number with Defective Teeth.
1915–16,	99,862	56,750[1]
1916–17,	104,287	55,638[1]
1917–18,	104,762	50,507
1918–19,	100,564	44,531
1919–20,	105,193	45,567

[1] During the year 1915–16, and from Oct. 1, 1916, to Jan. 1, 1917, defective teeth were classed as primary and secondary. In some instances, if a pupil had defective primary and defective secondary teeth, it was recorded as two defects instead of one. In order to avoid duplication of defects, it was thought advisable to record defective teeth as one defect without regard to whether they were primary or secondary. This method was adopted commencing Jan. 1, 1917, and precludes comparison for the two years.

Number of pupils in elementary schools found by school physicians to have dental defects,	42,700
Number treated by private dentists,	15,808
Number treated at clinics,	16,178
Total number receiving treatment,	31,986
Number escorted to dental clinics by nurses,	10,923
Revisits,	20,923
Number of prophylactic treatments at dental clinics,	23,531
Number of toothbrush drills in classrooms,	4,370

HOW THE MOUTH HYGIENE PROBLEM IS BEING SOLVED IN THE BROOKLINE SCHOOLS.

THE NURSE'S PART.

By Ida M. Lewis, R.N., School Nurse, Brookline Public Schools.

THE establishment of the Brookline Dental Clinic for school children followed a course of investigations covering a period of ten years. In 1906 the school committee began a series of examinations for the purpose of obtaining definite data concerning the condition of the children's teeth. These inspections revealed in most cases a deplorable lack of care, and as a result notices were sent to parents urging them to give immediate attention to the matter by consulting the family dentist or by visiting the infirmaries of the dental schools.

Three years after this work was established, a school nurse was appointed, and regular visits to the dental schools were begun. But Boston children were also clamoring at the doors of these institutions, and it soon became apparent that only a small number of those needing treatment could receive it. The opening of the Forsyth Dental Infirmary made additional clinics available, but even this institution with its extensive equipment could not meet all the requests of the public, and Brookline's allotment of time was altogether inadequate for handling the problem with which it was confronted. However, though only a small percentage of those needing help could be cared for, the annual examinations by the school physicians, followed by notices to parents, the toothbrush drills and the frequent talks on clean teeth by the teachers and nurse kept the subject always in the minds of the children in such a manner that when the dental clinic was opened by the local board of health on Oct. 2, 1916, the children were ready for it; and during the four years of its existence seldom has it been necessary to urge a pupil to keep his appointment, for each child has eagerly awaited his turn to visit the dentists.

When the clinic was put into operation, the nurse was given entire charge of selecting the children, with the instruction that the work for the first year was to be limited to the six-year molars of the primary school pupils. The system which was then developed and found to give satisfactory results has since been followed as the definite program for each year's work. The nurse has concentrated her efforts on one school at a time, that is, in each district, separately, she has made a drive on teeth. All the pupils in each room have been examined by her on the same day, and the name of each child entered in the dental record book, accompanied by a sign which indicated whether or not the six-year molars appeared to be in need of attention.

Armed with this information, the nurse during the first year visited the homes of the pupils, and, if the family circumstances seemed to warrant it, urged the mother to take the child to a dentist. If this were impossible, the need of attention was explained, and the mother was asked to sign the following application blank: —

BROOKLINE PUBLIC SCHOOLS.

In behalf of   , a pupil of the   School, I hereby apply for treatment at the Brookline Dental Clinic, and authorize, if necessary, the administration of a local anæsthetic.

Guardian.

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Since the first year, however, it has not been necessary to make these calls, except at the homes of new pupils, for as children and parents have a clear understanding of the importance of continued attention to the teeth there has been no difficulty in securing regular attendance at the clinic every year. The sections of the town which are served by the clinic have a fairly stable population, a fact which adds greatly to the satisfaction of the work.

The application blanks are now taken home by the children on the day of the examination, and almost without exception they are returned on the following morning with the mother's signature. After the blanks have been signed, a definite day of the week is appointed for each room, and the children make their visits in turn until all have received attention. Great care is taken to make the visit to the clinic a happy occasion, the importance of clean teeth is emphasized both from the standpoint of health and also from the æsthetic point of view, and every effort is made to create in the minds of the children the idea that clean teeth are to be the rule, and a visit to the dentist a part of each year's program.

As a result of the first year's work of the clinic, all the six-year molars in the first three grades were taken care of either by the family dentist or at the clinic. The following year the same children were seen again, and this method has been continued from year to year, it being the aim to carry all the pupils needing assistance through the elementary schools.

After the work had become well established, the board of health appointed a nurse to work in the parochial school, and for the past two years the pupils of this school also have been attending the clinic.

In the early days of our dental hygiene campaign, the care of the teeth was treated as a separate subject, but with the awakened interest in health it has now become a part of the whole health program. Among the health rules now being taught to the children is included, "Clean your teeth at least twice a day — before going to school, and before going to bed." At mothers' conferences the nurse continually emphasizes the relation of good teeth to good health, and the co-operation of the mothers is solicited.

The shining ivories, which are revealed to the nurse by the smiling greetings of the children as she meets them on her round of duty, give ample evidence that dental hygiene is a live subject in the minds of these boys and girls. And the frequent expressions of gratitude which she hears from the teachers — such as, "It is the greatest relief to have no more toothache in my room"— have established the conviction in her own mind that the Brookline Dental Clinic has already justified its existence.

THE DENTIST'S PART.

By D. F. Spinney, D.M.D., Director; W. E. Wade, D.M.D., and F. C. Allen, D.M.D., Operators.

FROM the very beginning our one idea and constant aim has been to carry on the work of the school dental clinic in every way as we would in private practice. Appointments are made sufficiently far ahead for both teacher and pupil to arrange for same.

In order to give the best attention to each child, we find it necessary to limit the number of patients seen during the morning. The exceptions to this rule are the toothaches and other emergency cases which, of course, we stand ready at all times to alleviate.

That we may avoid confusion as to work being done, and that records may be more easily kept, each operator confines himself to one school at a time, until all children needing dental care have received attention.

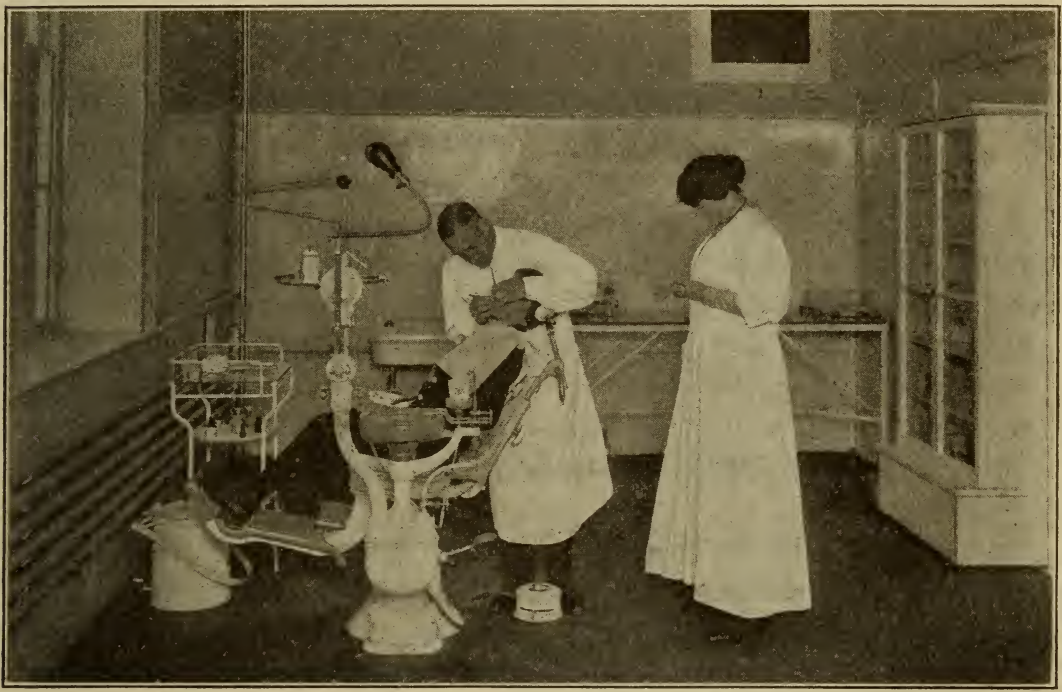
Each patient on his or her first visit is carefully initiated into the mysteries of the dental chair and equipment; also, at this time, nothing but prophylaxis is attempted. By the use of cleansing agents, and the generous use of the porte-polisher and dental floss, the teeth are made as clean as possible. As we are very careful to cause no pain we gain the confidence of the child, thus making it easy for the other work at a later date.

Believing that an ounce of prevention is worth many pounds of cure, we are very careful to paint all fissures of erupting molars with Howe's solution of silver nitrate; we also fill many of the temporary teeth with zinc oxide and eugenol paste into which silver nitrate crystals are incorporated, thus arresting decay and saving the teeth until the time for their normal loss. This procedure is followed as a matter of routine every school year. Thus the children are constantly under observation up to the seventh grade, and owing to the lessened amount of reparative work necessary for children who have had attention for several successive years, we feel confident that we can soon take in the higher grades.

Great stress is placed on sterilization of all instruments. For this purpose an electric sterilizer of the Castle design is used. It was decided when the clinic was started that an ideal arrangement would be to obtain a metal tray of dimensions that could be readily inserted into the sterilizer, and one which would contain a complete set of instruments; our idea being that after the instruments had been thoroughly washed with soap and water they could be placed in the tray, sterilized and dried without being contaminated by the hands, thus providing an excellent method of obtaining asepsis. We therefore obtained a nickel-plated copper tray, perforated to allow the water to drain off; it was also partitioned and grooved to hold a set of twenty-six instruments. With this set we are able to perform any dental procedure which we are called upon to do, such as cleaning, filling, etc., either of a temporary or permanent nature. Our surgical instruments are also sterilized by the above method, except novocain syringes where platinum needles are used, and these are easily sterilized in the flame of an alcohol lamp. Great care is always exercised that nothing of a septic nature comes in contact with the patient's mouth, and the results have been most gratifying. It may be interesting to note that since our chairs are of porcelain, the arms, back and headrest are disinfected with a germicidal spray.

Every child is taken individually on his first visit to the clinic and given full instructions in regard to the care of the teeth, emphasis being placed on clean teeth and their relation to good health. The proper use of the toothbrush is also explained; and not only is this instruction begun in the clinic but it is continued in the classroom.

It is surprising to note how quickly the children become interested in mouth hygiene, if approached in the right manner. Time and time again they come to us with inquiries concerning the condition of their teeth; we also have many patients who, six months after prophylaxis, come to the clinic with teeth in almost perfect condition as regards cleanliness. This is in direct contrast to preclinic days when the care of the teeth and the use of the toothbrush were sadly neglected. Our committee has now made it possible for us to sell toothbrushes and powder at the clinic, which marks another step in our progress.



A Corner of the School Dental Clinic, Pierce Primary Building, Brookline, Mass.

The general attitude of the children is remarkable; the old dread and fear of the dentist has long ago vanished. We no longer have to battle with them in order to obtain our results. Everybody wants to be first, and they sometimes come with imaginary toothaches, just to visit the clinic. Everywhere we see smiling and happy faces. The old drudgery of working on children's teeth has slowly passed away with our greater knowledge of human nature, and what once appeared to be a difficult morning's work now takes on the nature of a few hours of pastime.

THE DENTAL CLINIC FROM THE TEACHER'S POINT OF VIEW.

By Mary McSkimmon, Principal of the Pierce School, Brookline, President of Massachusetts Teachers' Federation.

THE love of clean, white, shining teeth was never so easy to arouse as to-day. When our boys marched through London at our entrance into the war, the generous applause for those keen-eyed, bright-faced, alert soldier boys was accompanied by shouts of "Smile, Sammy, smile!" The crowding throngs liked the splendid white teeth that made a flash of beauty in the plainest face.

And every single school child feels a thrill of pride in those soldiers of ours, and a big secret desire to be just like them. The dental clinic is the plain, straight path to that attainment, and the teacher counts it one of her high privileges to help the child avail himself of its blessings.

We remember all too well the hours of wasted effort to interest a child with a grumbling toothache in the products of North America, or in the subtleties of inverting the divisor. We remember, also, the discouragement of counting up the lost lessons when the "ulcerated tooth" kept him at home and the absent marks rolled up.

But there was a more grievous discomfort still, — the ambitious, hard-working little lad, who pegged away with grit unbounded to get 100 per cent in his arithmetic, and who turned to his teacher with a triumphant smile of success, showing those rows of teeth so unclean, so decayed, so disgusting that the kindest hearted teacher in the world could not fail to shudder at the sight of them.

And now the rescuing dental clinic! What a beatific smile breaks forth when the good dentist hands the mirror for his patient to see in his own reflection for the first time in his life, perhaps, teeth clean and white, a transforming miracle wrought by the first prophylactic treatment.

It is now that the greatest opportunity for the teacher has come. What self-respect begins to dawn! How much more there is on which to build character when this new pride in cleanliness has awakened! Now is the time to teach the care of the teeth regardless of age or season. Now is the follow-up work called for, and the possession of a toothbrush takes on an importance that is hard to overestimate. Does not the clean heart seem to stand nearer too?

Our school clinic has established a new attitude toward the unpleasant part of repair work. The home often has to coax and lure and bribe the children to undergo this work. At school, one would think a new and delightful experience was in store, from the smiling dental treatment. Indeed, we have to question sharply, certain applicants begging to go to the dentist, as perfectly sound teeth have been offered as a field for his labor by occasional young rogues who like to test his keenness of diagnosis.

Our clinic owes not a little of its success with our young people to a good practical knowledge of child psychology. The wise dentist usually works with a child standing close to the patient, watching each move eagerly and approvingly It is the unknown, mysterious things that hurt most, because they frighten first; and I have often been amazed at the wisdom of letting the children watch the skillful handling of the efficient little tools of precision. The patient, too, controls his tendency to whimper, if hurt a little, at the sight of the expectant grin at his elbow.

The wise teacher will not need to have textbook limits in physiology and hygiene assigned her. She knows that clean teeth are an achievement and not a gift. To keep them clean and shining by brushing daily will not be the result either of scolding or of nagging. That has failed a thousand times. She makes a game of it. A clever and successful teacher of my acquaintance has beautiful cards ruled off for scores. A captain is appointed for each row. It is the work of a few seconds only to look over his men's teeth and give each the mark the teeth demand. If you want lively competition just call half the class Yale and the other half Harvard and see how close the score will run, and how soon the last little lazybones will fall into line for the honor of his side. Let them make rhymes for the younger children to read on the pleasing subject of tooth and toothbrush. Here are some from a Michigan school: —

JACK'S TOOTH.

This is the mouth that Jack had.
This is the tooth that grew in the mouth that Jack had.
This is the germ that decayed the tooth that grew in the mouth that Jack had.
This is the toothbrush that removed the germ that decayed the tooth that grew in the mouth that Jack had.
This is the boy that wielded the brush that removed the germ that decayed the tooth that grew in the mouth that Jack had.
This is the mother that taught the boy to wield the brush that removed the germ that decayed the tooth that grew in the mouth that Jack had.

THE TOOTHBRUSH.

He had no toothbrush because of cost.
For the want of the toothbrush with a toothache he tossed.
Because of the toothache the tooth he lost.
For the want of good teeth his health was lost.
For the want of good health his pleasure was lost.
All for the want of a toothbrush and paste.

The relationship between poor teeth and poor school work is pretty well established. Poor teeth mean, first, discomfort, then irregular periods of absence, next liability to disease from presence of germs in caries of teeth. Then comes the invariable falling behind, the loss of courage and interest, and all the factors of failure are present. The dental clinic is the great blessing of prevention, an ounce of which is still worth a ton of cure. Think what achievement of one's aim means, even if it is a child's aim, and you may begin to reckon the good of the school clinic for all the children, of all the people.

Visitors to our dental clinic often say, "This has come to stay." Yes, for this generation. I do not believe that the fathers and mothers who, as children of this day, grow up in the constant comfort of clean, whole teeth will ever let their children neglect the teeth to the necessity for so much repair work. Perfectly clean teeth would remain sound and whole, and the coming citizens of this dear land must be taught to realize that no time, or study, or zeal is too much to bestow for the making of better men and women to serve her whom they call "Sweet land of Liberty."

THE SALVATION ARMY DENTAL DISPENSARY.

By Fred G. Rollins, D.M.D., Dental Surgeon in Charge.

A valuable addition to the numerous public activities of the Salvation Army is an entirely new enterprise known as the Roxbury Dispensary, which, in conjunction with Tufts Dental College, under the direction of Dean Wm. Rice of that institution, and Capt. E. R. Gifford, manager of the Salvation Army Dispensary, has developed a dental clinic which has enlarged from its modest beginnings until it has reached proportions which have far exceeded the expectations of the institution. At present there are seven chairs.

The object of the clinic is to furnish the public, both children and adults, high-grade and efficient dental treatment at a nominal fee. In extreme cases where the patient is unable to pay the small amount required, the work is done gratuitously.

With a complete equipment of the most modern type, together with the employment of methods which are strictly aseptic, a large number of patients are treated weekly.

The clinic is open daily throughout the year, and handled by a corps of experienced operators supplied by Tufts Dental College and nurses from the Salvation Army staff.

The scope of the work includes all branches of the profession from preventive and operative dentistry to oral surgery. Co-operating with the dental are the medical, X-ray and surgical departments.

The dispensary especially provides opportunity for school children to receive dental attention and beneficial instruction in prophylaxis and hygiene. These children are under the direction of a school nurse whose duty it is to work in conjunction with the dispensary to establish in the minds of the children the necessity for mouth hygiene.

The beneficial results obtained are evidence of the fact that the activities of the Salvation Army in this particular field of endeavor are contributing in a large measure to the health and welfare of the future citizens of the Commonwealth.

THE DENTAL PROBLEM IN RURAL COMMUNITIES.

By Helen Harriman, Home Demonstration Agent, Hampshire County Farm Bureau.

IN the days of "fo de war" school children in rural Massachusetts heard little or nothing about daily health rules, dental and nutrition clinics and the like. It took the war with its hundreds of disqualified draftees to start the most progressive people and communities into action. Gradually people began to wonder how their community could meet the problems of making their boys and girls fit. Take, for instance, one rural town of six hundred people, 15 miles away from any railroad. The earnest question of one interested mother of six children, "Isn't there some way the Farm Bureau can help us get a dentist up here to care for our children's teeth?" really bore fruit. She explained very carefully that repeated trips to the nearest dentist, who was miles away, were impossible because of the expense of the trips by stage, or the inability of one of the family to accompany the child each time. Perhaps the horse or the Ford were needed in the hayfield. Then, too, travel during the winter months was often impossible no matter how badly the tooth ached. With all these obstacles to surmount, the result was the tooth came out through the efforts of the country doctor. When another tooth began to ache, the problems and the remedy were the same, and so on. An extremely high percentage of the adults in this town, of course, wore false teeth. Most of the boys and girls of sixteen years and over had very neglected mouths. It was a very common experience to look into the mouth of a ten-year old and find all four six-year molars nothing but black pits.

Before the next summer in this same little town, a second-hand dental equipment was placed in the town hall and a dentist from the nearest city spent one day a week there.

Almost every rural town has similar dental problems and they can be solved in similar ways. If children are taught the care of their mouths from the beginning, and if it becomes as much a part of them as washing the face and hands, half of the problem is solved. If the teeth are carious, particles of decay, bacteria and poisons are carried along with the food to the stomach. Unless the teeth, the grinding machine of the body, can break up the food sufficiently, the stomach has to overwork, and sooner or later it rebels. When a twelve-year old confesses that he brushes his teeth when he goes to school, but does not bother in the summer vacation, only half the health instruction has been done. Toothbrush drills, a daily record of tooth brushing in the school with a good live teacher to back up all health teaching, make the dental problem in rural communities smaller. Then, a small dental clinic supported by the people in the town will solve the other half of the problem. If one town did it successfully, another can.

MIDDLESEX COUNTY FARM BUREAU DENTAL CLINIC. DEMONSTRATION OF WHAT CAN BE DONE FOR CHILDREN IN RURAL TOWNS.

By Fred D. Griggs, Managing Director, Waltham.

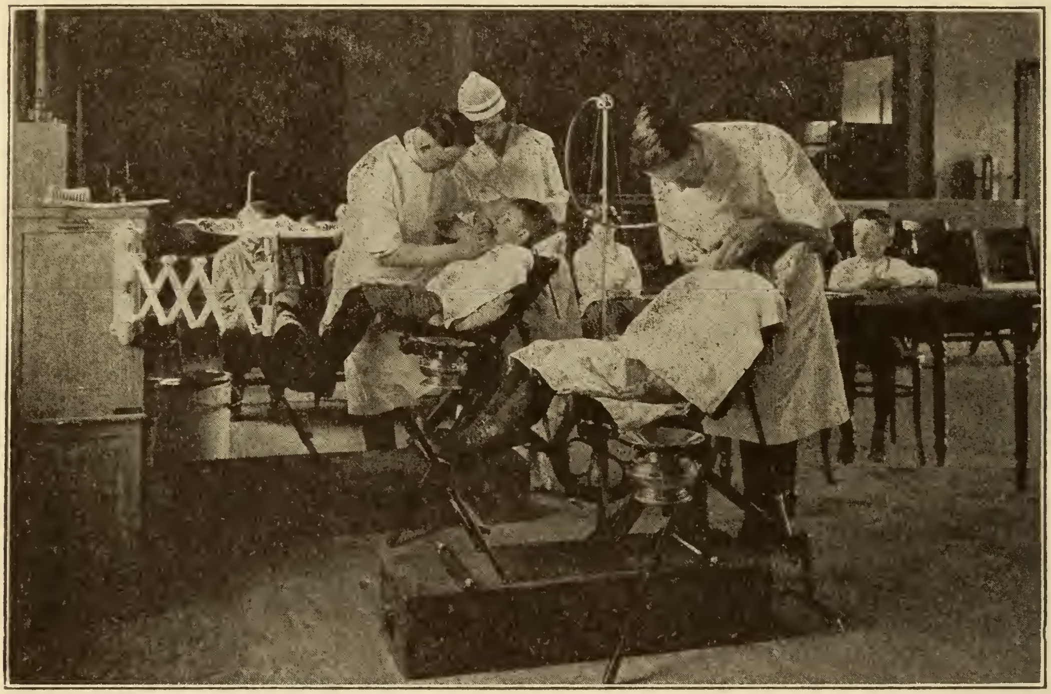
RURAL children living in towns far removed from a resident dentist must in some way be given the same opportunity that most city children enjoy of having dental work done properly. Obviously it is not practical to transport hundreds of children from the country to the dentist; rather the dentist must be brought to them. If the towns do not see the value of this at the start, it must be demonstrated to them.

The Middlesex County Farm Bureau, with headquarters at Waltham, Mass., is perhaps the first organization of its kind to act on this problem. The Bureau's chief function is demonstration work in agriculture and home economics. The question of dental hygiene came up for discussion at the annual meeting in December, 1918, at which time Mrs. James J. Storrow of Lincoln, chairman of the home department, said: "It seems to me that too much attention is being given to the care and improvement of cows and pigs, and too little to the children. The crying need right now is for dental treatment. If no other organization is prepared to provide dentists for our rural towns, I am in favor of the Farm Bureau taking up the project immediately." The vote was unanimous.

It was in May, 1919, that the clinic materialized, with one operator. A second operator was added in December. By the middle of June, 1920, four towns had been visited and nearly 1,000 children's mouths made clean. The clinic was an unqualified success in the opinion of children, parents, school authorities, and every one connected with it.

Appropriations were made in two town meetings as a share in the expense of the clinic's return. Fourteen other rural towns have expressed an active interest, and will make definite arrangements as soon as the clinic can be made available for them.

As a pioneer, the Middlesex County Farm Bureau dental clinic has had to learn through experience. A few of its original ideas and policies have had to be changed and modified. In the light of a year's successful service, however, it is now, in the opinion of the committee in charge, established on thoroughly practical lines. Money has already been pledged for the establishment of a second unit, which will be based upon the present clinic as a model.



Middlesex County Farm Bureau Dental Clinic in operation.

The Unit and what it can do.

The clinic's main equipment consists of a special cabinet built in two sections, two collapsible operating chairs, one collapsible foot engine, which fits into a suit case, and instruments all of which can be packed in the rear of an ordinary Ford touring car for transportation from one town to another. The total cost of this equipment was approximately $750, based on 1919 prices. The efficient unit for such a clinic is believed to be two operators and one dental hygienist. The Middlesex clinic has had the two operators in the past; the addition of a hygienist is contemplated as soon as one can be found.

Past experience has shown that this clinic with two operators and a hygienist can instruct and complete work for a few more than 100 children a month. The children will average between eleven and twelve years of age. The first visit of the clinic will find between 60 and 80 per cent of the youngsters never having had any dental attention whatever. The 100 children will average 750 fillings, 100 extractions, 94 cleanings, 15 canal fillings and 200 silver nitrate treatments for incipient decay, totalling, approximately, 1,200 operations. This requires an average of three and one-half hours per child. On the second visit, one year later, an average of one hour is required per child to do cleaning and a very few fillings.

The Middlesex clinic with two operators and one hygienist is operated at a cost of approximately $180 per week, including $120 for salaries, $30 for supplies, laundry and miscellaneous expenses, and $30 for overhead and depreciation. The clinic averages ninety hours of work per week, making the cost per hour per patient approximately $2. The clinic is usually set up in a schoolhouse. The flow of patients is steady and there is little time lost.

Nothing is done for a child during the first sitting except to clean and examine the teeth. After the first day, the hygienist is able to do all of this work, as well as to take care of the instruments of the operators, make appointments and keep records. In this way much valuable time is saved for the dentists, with the result that many operations are accomplished during the brief space of one hour.

Reparative work, however, may almost be said to be secondary to the education of the children along lines of oral hygiene and its importance. Literature is distributed, lectures delivered in the schoolroom, toothbrush drills instituted, and individual instruction given when the child applies for actual operative work. Recommendations are also passed on to the parents relative to surgical operations for tonsils and adenoids where needed.

How the Clinic is organized.

The special dental clinic committee appointed by the Farm Bureau employs the operators, owns the equipment, formulates policies and rules, and has general supervision of the entire project. At this writing this committee consists of Mrs. James J. Storrow of Lincoln, originator of the idea; Dr. Harold DeW. Cross of Bedford, director of the Forsyth Dental Infirmary, Boston; Herman C. Knight of Townsend, superintendent of schools; and Mrs. Tyler A. Stevens of Wilmington, president of the Public Health Nursing Association of that town.

A town wishing to take advantage of the clinic must first form a local committee of responsible persons who will guarantee the payment to the Bureau of $180 per week, — the cost of maintenance. This committee is usually made up of public-spirited citizens representing the local Red Cross, parent-teacher association, district nursing association, and other interested groups.

One of the first duties of the local committee is to secure the support of the local school and health authorities, including near-by dentists. Its next big job is to advertise the clinic and its purpose as widely as possible. A preliminary mass meeting for parents and townspeople is held previous to the establishment of the clinic, in order to acquaint people with the need it is designed to fill. Dental clinic application cards are then distributed to the school children, these cards being returned as soon as they have been signed by parents authorizing treatment.

Operating record cards are furnished the local committee, which is responsible for sending out and collecting all bills. In the case of patients unable to pay full charges, the local committee endeavors to make proper provision so that the work may be completed without financial embarrassment to the parents. The committee may readjust bills in individual cases, either subtracting from or adding on as they see fit. Bookkeeping forms and report cards are furnished by the county committee.

The local committee is held responsible for a steady quota of patients during regular days and hours. This is arranged with the co-operation of teachers, who see that children are sent to the clinic at the proper time. The operators confer with the local committee in regard to special cases, such as those requiring hospital treatment and X-ray photographs.

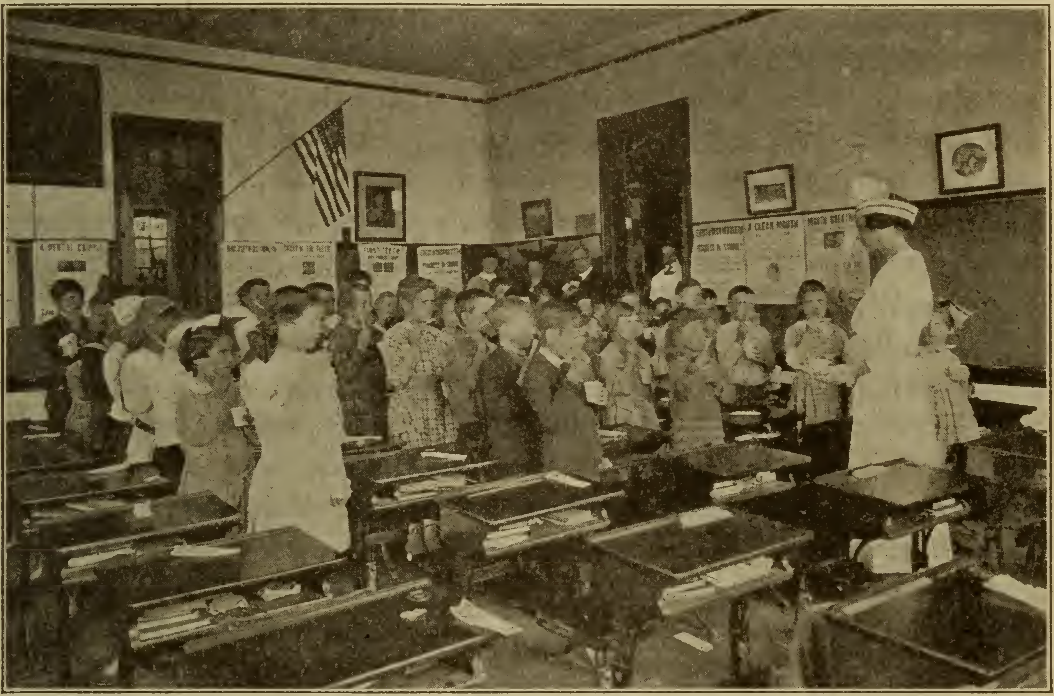
The local committee sees to the furnishing of suitable quarters for the establishment of the clinic, and also assists in securing comfortable living quarters for the operators and hygienist during their stay in the town.

Regular office hours in most towns are from 8.30 A.M. to 12 M. and 1 p.m. to 4.30 p.m. every workday except Saturday, when the hours are 8.30 A.M. to 12 M. In isolated towns, however, where most of the children have to rely upon school barges for transportation, no work is done on Saturday, but an additional hour's work is furnished on school days.

The hygienist keeps accurate daily report cards of the time spent on each patient by each operator. At the end of each week, the totals from all daily report cards are added and incorporated in a weekly report which is forwarded to the county committee. At the completion of the clinic's work in a town a summary of the weekly report cards furnishes a complete report of the project from beginning to end. A complete inventory of equipment is taken after each engagement.

SOME FACTS LEARNED THROUGH EXPERIENCE.

The clinic started out with the idea of doing work for children during school hours at a nominal rate, and then taking care of adults after school hours at the prevailing rates for such work in that community. This policy has been dropped, however, and now no adults are treated except in cases of emergency. There were two reasons for the change: in the first place, there are so many children in need, that taking time for adults is like robbing the boys and girls. The adults may go elsewhere; the children cannot. In the second place, the Farm Bureau clinic does not wish to compete with established dentists in a community. There has never been any complaint on this score, but the Bureau wants to guard against any in the future.



Middlesex County Farm Bureau Dental Clinic Toothbrush Drill.

The county committee plans to give to each child at the end of the final appointment a suitable celluloid pin bearing the words "Clean Teeth, Good Health, and Middlesex County Farm Bureau Dental Clinic."

It is interesting to note that only a few more than 10 per cent of those who have applied for treatment thus far have not been able to pay the full charge. Some of these children of course can pay nothing at all; others pay up to a certain amount. The local committee decides in such cases, and the deficit is made up from guarantees offered by the town, the Red Cross, or some such organization.

In Wilmington, where 346 children received treatment, the cost per patient at $2 an hour would average about $7. The smallest bill figured at this rate would be 60 cents, the largest $25. Only thirty bills run over $13. Many of these children were of high school age and should be classed as adults. Those with large bills had never visited a dentist before.

To say that the clinic is popular with the children may sound impossible; nevertheless, such is the case. This is due to the fact that the operators are trained especially to work with children. They have been furnished very generously through Dr. Cross of the Forsyth Infirmary of Boston, the largest children's dental clinic in the country. Another source of success has been the brief time allotted for each appointment. This averages about three-quarters of an hour. When a child first comes to the clinic the operator confines his work to cleaning the teeth and instructing the child as to the use of a toothbrush. In this way the youngster's confidence is easily won. Continued appointments are arranged for so that the child is never tired of being in the chair, and the more difficult operations come toward the last. How different this is from the case when the parent takes the child several miles to a dentist. Such a trip generally means a long sitting, and the hardest work is done owing to the time limit. Is it any wonder that the child firmly resolves never to go to the dentist's again? A tooth may ache ever so hard in the future, but he will not "let on" if he can help it.

In the rural towns already visited by the Middlesex County clinic there are many alien families. Strange as it may seem, they are among the first to appreciate the need of the clinic, and they are also among the first to pay their bills.

Special stress is placed upon the necessity of making collections as soon as possible. If this is not done, parents who still owe money are reluctant about letting their children come to the clinic upon its return trip six months or a year later. This defeats the end in view of putting the mouths of the children in a clean condition and keeping them so.

THE CLINIC'S HISTORY IN BRIEF.

In establishing the Middlesex County clinic the Farm Bureau committee worked in close co-operation with Dr. Merrill Champion, director, Division of Hygiene, Massachusetts Department of Public Health, Dr. Edwin N. Kent, consultant in mouth hygiene, Massachusetts Department of Public Health, as well as Dr. Cross. These specialists assisted in planning and securing the necessary equipment. The Forsyth Dental Infirmary has furnished trained operators.

The clinic began work in Townsend May 5, 1919, working in co-operation with a committee from the parent-teacher association and the Red Cross. This committee had canvassed the town thoroughly and received requests from parents of 80 per cent of the school children to have their boys and girls receive any necessary treatment. The school committee furnished quarters in the various schoolhouses and allowed the children to have the work done during school hours. Those living in the center of the town came after school hours. It took until the middle of August to complete the work. Dr. E. F. Sullivan, the operator, enjoyed a few weeks' vacation until September 15, when the clinic was established in Ashby with the co-operation of the local Red Cross organization. Meanwhile, demands for the clinic were coming in so rapidly from practically all of the rural towns of the county that a second operator, Dr. J. T. Saunders, was added.

In Townsend, where the clinic was first established, 197 children were treated. Of these, 74 per cent had had no previous dental treatment. The most deplorable conditions were found in the higher grades and high school.

In Ashby, the next town to have the clinic, 115 children received treatment. Of these youngsters, 84 per cent had never had the services of a dentist. About 54 per cent of the children who applied were of foreign descent with little or no conception of a toothbrush or its important use. Three cases were so extreme as to require reference for surgical operations.

Wilmington was the third town to establish the clinic under the auspices of the Wilmington Public Health Nursing Association. Here high school students in large numbers were taken for the first time. From Wilmington the clinic went to Westford, where it was busy until the close of the school term.

As stated at the beginning, the Middlesex County Farm Bureau dental clinic was established as a demonstration. The Farm Bureau took up the project because there seemed to be no one else with funds and the necessary organization for getting the work under way. The

Bureau has worked hand in hand with State and local health authorities in all things.

Just what will develop from the demonstration is a matter for the future to decide. It is believed that the first step will be for three or four towns comprising a school district to co-operate in buying portable equipment and employing one or more operators along the plan already worked out so successfully. Whether or not the towns should go further and actually provide free dental treatment through taxation is a question which is bound to be approached rather slowly by most if not all of our New England towns.

The fact remains, however, that most people can well afford to pay for this service. The Middlesex County Farm Bureau dental clinic is demonstrating that people are not only willing but anxious to pay once they appreciate the importance of the work and are given the facilities which a clinic provides.

HOW A STATISTICAL ORGANIZATION MEETS THE MOUTH HYGIENE PROBLEM.

By Edna Paton, Dental Hygienist, Wellesley, Mass.

IT is one of the fundamental principles of the Babson Statistical Organization that oral prophylaxis is one of the greatest essentials of business efficiency, and, so believing, our dental clinic was established in November, 1917. It is under the supervision of Dr. George H. Wright, an eminent dentist of Boston, Mass., who visits the clinic at stated intervals.

We have also in constant attendance a dental hygienist, graduate of the Forsyth Dental Infirmary of Boston, whose duty it is to examine the mouth of each employee every six weeks, reporting to such employee any condition needing dental attention, and also to give the teeth a thorough prophylactic treatment. In addition to this, upon entering the organization, each new employee must have the teeth examined and cleaned by the hygienist, before the application for a position can be finally approved, and, later, a special inspection is made of the teeth by Dr. Wright. In the six-week intervals between treatments, any defects pointed out at the time of cleaning must be corrected.

The proper care of the teeth is largely a matter of habit, and the constant inspection and regular treatments not only discover any defects, but tend to create that habit of perfect oral hygiene in the individual which is in itself an important factor.

The hygienist keeps very complete records of the condition of each employee's teeth, and also keeps up to date a schedule on the official bulletin board, giving the day and hour at which each employee is to appear for treatment. The work is all done during office hours, and entirely without expense to the employee. Our organization is run on a profit-sharing or co-operative basis, and the employees have much to say about the details of management. So thoroughly convinced, however, is each member of the force of the value and vital necessity of this clinic that this department would be one of the last to be eliminated in time of need.

In these days we realize more and more how many preventable evils come from infected or neglected teeth. Seeing just one person, crippled and almost helpless with rheumatism, helped by a few visits to the dentist and the removal of the offending teeth is a most potent argument for expert dental care and proper prophylactic treatment. Another argument of the same sort is knowing that a friend's "heart trouble" is rapidly subsiding and disappearing because of the extraction of those long-borne-with roots, which were always going to come out, but never did, and which were never suspected of being the trouble-makers they really were.

Realizing all these facts the members of our organization are most enthusiastic as to the value of the dental clinic, which is doing its important bit to keep them as healthy and efficient as possible.

DENTAL SERVICE IN A TOWN OF FIVE HUNDRED.

By Mrs. A. H. Streeter, Cummington, Mass.

IN talking of a local dental clinic for rural towns one often hears the remark, "That is impossible for us. Our town is too small." But the experience of one such town helps to prove that any community, however small, can have regular dental service if it chooses. That is the essential point. A few people must really want it and be willing to work for its establishment.

Cummington is a very small town in Hampshire County, with about five hundred inhabitants, and the nearest city is 20 miles away. It was no easy problem to take our children to a dentist regularly. So in a spirit of self-preservation we began to talk of a dental clinic. One of our doctors had long advocated this very thing, which paved the way for us.

One night in February, 1919, when the Farm Bureau held its annual meeting in town, we laid the idea before our Home Demonstration leader and asked her assistance. Then we went to the school committee, which immediately took up the matter. They selected a representative who consulted the school dentist of Northampton. He advised buying our own outfit, so the school committee bought a second-hand chair, cabinet, foot-power engine and sterilizer. The selectmen offered the use of a part of their office — a room in the village school building — as temporary operating room, and there the furniture was installed.

Meanwhile the Farm Bureau had found a dentist just beginning practice who agreed to give Cummington one day a week and to furnish his own instruments and supplies. School children were given first place and later any one needing dental work. A young woman in town gave her time as assistant. The first work was done in June, less than four months after the plan was laid.

So far each family has paid its own expenses, and no examinations have been made except at the parents' request; but the committee plans to have all children of the lower grades examined and to pay that bill from school funds, then the parents will pay for the actual work.

This is the simple plan that we have worked out for Cummington. It is so simple that any town can do as much, modifying and adapting it to its own local needs. If a few people really decide that a dental clinic is needed, the details will quickly fall into line.

DENTAL CLINICS IN WORCESTER COUNTY.

By Mildred C. Thomas, Director of Woman's Work, Worcester County Farm Bureau.

It seems almost unnecessary even to speak of the need of the dental clinic in this article, and yet, because that need was laid before the Worcester County Farm Bureau as urgent, and its fulfillment a specific way in which that organization could serve a community, the writer feels justified in mentioning the reasons for helping to establish two clinics in Worcester County. It does not seem possible to those unfamiliar with the geography of the county that there are so many inaccessible towns in it, and that the smaller communities do not have all the so-called necessary or common advantages of the city. To those who know little of the limitations of some of our rural districts it is incredible that in Massachusetts dentists have not established themselves in every town, or that all children cannot have dental care. But it is true and for this reason it may easily be seen why there is neglect both on the part of the parents and of the children in the care of the teeth when a child must go from 5 to 20 miles to the nearest dentist. It is often a question of time as well as money, and to the rural women one is as important as the other. The result which one would naturally expect has followed, — an appalling percentage of diseased teeth among children in these communities. We have not reached the millenium in dental hygiene. Every one does not realize the need of caring for the teeth nor the value of nature's gift. There are many people who must be educated to the necessity of mouth hygiene, and yet, along with that education, there must be a source from which to draw.

It was to meet the need for dental treatment, it was because men and women were realizing the seriousness of this condition and desired help, that the Farm Bureau, an agency for extension service, purchased a simple dental clinic outfit at a cost of less than $300. As this project was experimental, it was deemed unwise to expend too much money on equipment, though in no way was the work in the clinic to be superficial. The equipment consisted of a collapsible chair, foot engine, sterilizer and equipment case with a few small accessories.

The next problem was to secure a dentist. That was a real problem, for lack of funds meant difficulty in securing the right sort of man. But we were fortunate in obtaining a graduate of Tufts Dental College, a man of ability and unselfish purpose, and willing to go into the field. Two towns in our county were very anxious to start work, so it was deemed advisable to alternate the clinic between Ashburnham and Lunenburg. The Red Cross organization in both communities was responsible for the general organization and financing. The Farm Bureau merely loaned the equipment and all expenses were met by the local group, $50 per week for the dentist's salary and $25 per week for supplies. With the details completed, the dentist started his clinical work. In both towns his office was located in the school building, easily accessible to the patients, — the school children. The dentist's assistant was the local nurse, whose aid was invaluable.

I well recall my first visit to the clinic. Knowing the disinclination of youth toward dental treatment, I rather expected to hear and see some unpleasant things, but I need not have had any such fears, for the clinic presented a most happy and cheerful atmosphere. There was a child in the chair and one or two waiting for treatment, and it appeared that going to the dentist was no ordeal but rather an adventure to which the children looked forward.

When the dentist arrived in town the first procedure was to examine the teeth; then with the consent of the parent, appointments were made for future work. All the work was done during school hours and on Saturdays.

Often the question is asked, "How do the children respond?" The answer is, as children usually do when made to see the importance of anything. I well recall hearing the dentist tell of two boys traveling 3 miles through a severe snowstorm to have the dentist attend to their teeth. Going to a dentist has not always been considered the greatest incentive in the world for a 6-mile tramp.

We need only to recall the winter of last year to be convinced that if a clinic could be maintained under such odds its continued existence would be rightfully assured, and it has been, for after Ashburnham, South Ashburnham and Lunenburg were taken care of Princeton, through the grange and town officials, asked for the clinic. There was some question as to the feasibility of carrying on the clinic in the summer, for the committee was afraid the children would not keep appointments. There, again, their fears were ungrounded, and the work flourished throughout these months.

Along with the clinical work it has been deemed most advisable to carry on some educational work. Through the Massachusetts Department of Public Health arrangements were made for talks to the children on "The Care of the Teeth." Hundreds of toothbrushes were sold to the children, and in every possible way we have tried to carry on the educational work so necessary to the permanent success of the clinic.

In addition to the traveling clinic the Farm Bureau has helped in the establishment of a permanent clinic in Rochdale, Mass. Rochdale is a small community with no dentist available. Travel to Spencer or Worcester was not a simple matter as regards either time or money, and the result of lack of dental care was most evident and becoming more and more serious as time went on. Interest was stimulated through a health day in which the Massachusetts Department of Public Health again co-operated. We gathered together the school children in the afternoon, and through pictures and talks aroused their interest in health, especially emphasizing dental hygiene. In the evening a mass meeting was held; community singing, motion pictures and a general health talk furnished the program. Rochdale soon took action to introduce dental service. As this did not seem a suitable place for a traveling clinic, a permanent dental equipment was purchased at a cost of about $300. A dentist who was willing to spend one or two mornings a week in Rochdale was secured from Worcester, — a young man who was interested not only in building up a practice but whose professional vision was large enough to undergo the difficulties of rural travel and inadequate equipment.

In the other clinics the town organizations finance the work and the patients pay at the rate of $2 an hour. Where there is deserving need, the child is treated free, the expense being met by the committee. In Rochdale the dentist is the financial operator of the clinic and the patient deals directly with him, arrangements being made that the clinic be operated at the rate of $3 an hour.

Although the Rochdale clinic was started after the closing of the schools, it was established in the school building and successfully maintained. A most gratifying result is the interest aroused in the surrounding towns. Mouth examination has become obligatory, and it is almost safe to say that clinics will soon be established in adjoining towns.

There is one understood and recognized fact, both with the dentists and the organization supporting these clinics, that the work be of the highest order, done not for temporary but for permanent relief. During the fourteen months the traveling clinic has been in operation, and the four months the permanent clinic has been maintained, 639 patients have been treated, and 80 per cent of these had never had previous dental treatment.

The need of the work is self evident, and the value not possible to estimate. Every town which has had the demonstration has asked for the return of the clinic. To finance a project which calls for an expenditure of $75 per week is no small undertaking for any community of limited numbers, but its value makes it worth while.

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EUGENE R. KELLEY, M.D., Commissioner

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A SURVEY OF THE RURAL CHILDREN OF WESTERN MASSACHUSETTS.

By Mary Putnam, M.D., Clinic Physician, Department of Public Health.

THE plan of an extensive survey of the children of rural Massachusetts was conceived in the autumn of 1919. During the preceding summer a series of clinics had been held at the country fairs throughout the State, and lack of facilities for the care of country children everywhere was apparent.

A plan was then made to cover the more inaccessible parts of the State the following year if an appropriation could be obtained to carry on the work. Two objects were kept in view: to obtain as comprehensive a picture as possible of the actual conditions under which the country child grows up, and the result as seen in the child; and to arouse community interest in improving these conditions, supplementing local endeavor with encouragement and advice, and trying to facilitate co-operation of already existing organizations directly or indirectly interested in child welfare.

With this program the clinic physician started on her field work in June, selecting the Berkshires as the most isolated farming district where native children could be studied, and where conditions had seemed worst in the earlier investigation. The ideal was, as in Minnesota, to go only where a visit was requested, but the work was so entirely new and unheralded that an initial introduction was indispensable.

The first weeks therefore were spent in visiting the small towns of the district, in calling upon and explaining to the local physicians, teachers, school boards, etc., the nature of the investigation planned and the purely preventive character of the work. The large towns were also visited to determine the hospital and dispensary facilities which might be available for cases subsequently met out of town. In passing, it is a pleasure to note that the large hospitals of Greenfield and Pittsfield, as well as several smaller ones, were exceedingly generous in their offers of help.

While very little real antagonism was encountered, there was much polite skepticism, and it was a comfort, indeed, when a warm reception was followed by an enthusiastic offer of co-operation. School superintendents and school teachers showed, on the whole, a more intelligent interest than parents — perhaps because the matter was more impersonal — and were, in many instances, most helpful. There was no District Health Officer at that time, but the nursing assistant gave valuable assistance. The local Red Cross and Farm Bureau were also cordial in their help.

At the invitation of the superintendent, the first clinics were held in a series of schools, — not because they *were* schools, but because here were already gathered together representative groups of children which it would be impossible, in these scattered settlements, to duplicate anywhere else. Whenever possible, parents were invited to bring the younger children to be examined.

In the succeeding weeks, 17 clinics were held in schools of the hill towns.

Examinations.

Most of the children were examined in the entryway of a one-room school building, the door into the classroom being closed for privacy, and the door overlooking the hillside left open for light and air. The children were dismissed from class two at a time, without interrupting the school routine, and examined as completely as was possible under such conditions. Where scales were available, the children were weighed and measured by the clinic assistant. Then they were stripped to the waist, and their posture, nutrition, musculature, osseous system and any deformities noted. Heart and lungs were gone over, and the possibility of abdominal disease was kept in mind. Next the head, eyes, ears, nasopharynx, teeth, scalp, skin and glands were considered, and the nervous condition and general well or ill being noted. So far as time permitted, diet and habits were discussed, and suitable advice was given.

A record was kept of all examinations and copies of a summary, and appropriate advice for those needing attention was sent to the superintendent, teacher or to some one else sufficiently interested to volunteer to follow up the cases needing oversight. In only one of the towns visited was there a district nurse of any kind; otherwise, of course, the report would have been sent to her. In many of the schools not only was there no school physician, but there had been no medical inspection for several years.

In September, at the request of the local Farm Bureau, and under its auspices, 6 clinics were held at country fairs. A clinic at the Becket Fair was held independently, by local request.

At the fairs an even more cursory examination had to suffice, but records were kept of weight and height, and, when possible, whether or not the child had been vaccinated, the condition of teeth and nasopharynx, and any obvious abnormality.

Additional records were obtained during three days at the large Eastern States Exposition at Springfield.

In November a survey was made of the school children of Williamstown. With the co-operation of the school authorities, and assisted by the school physicians, all the grammar school children and those of the intermediate grades were examined.

In all, 29 clinics were held, chiefly in rural communities. One thousand eight hundred and twenty-four children were examined, and a survey of the school children of Williamstown was made. Additional records, made by the clinic assistant and by the Farm Bureau agents, of weight and height, etc., of children not examined by the physician number 537, bringing the total records to 2,361.

REPORT OF CHILDREN EXAMINED IN 17 CLINICS HELD IN HILL TOWNS.

This includes practically all the school children of Florida, Rowe and Savoy, children of school and preschool age of Monroe, and children of preschool age of Williamstown. For convenience of classification, children examined at Richmond are included in this group.

To avoid duplication, records of children over five years old, examined in the Williamstown clinics of July and August, were not used. The records of almost all of these children appear in the November survey of Williamstown school children, portions of which are included in this report.

Boys over 5 years old,	133
Girls over 5 years old,	88
	221
Boys and girls under 5,	65
Total,	286

Owing to lack of scales, the children in only one school in Florida and in Monroe and Richmond were weighed.

Weights of 58 Children over Five Years Old — Florida, Monroe and Richmond.

	Number.	Per Cent.
Normal weight,	9	15
Underweight,	36	62
Ten per cent underweight,	11	19
Twenty per cent overweight,	2	3

Physical Condition of 221 Children over Five Years Old — Florida, Rowe, Monroe, Savoy and Richmond.

	Number.	Per Cent.
Teeth:[1] —		
Sound,	31	15
Carious,	164	77
Dental care,	16	8
Tonsils: —		
Enlarged,	45	20
Out,	19	8
Adenoids, enlarged,	30	13
Defective vision,	42	19
Ears,	8	4
Orthopedic,	20	9
Enlarged lymphatic glands,[2]	115[3]	53

[1] 211 recorded. [2] Omitting Richmond, 110 (of 181 recorded), or 61 per cent. [3] Of 217 recorded.

Among the 76 children in Savoy, the glandular enlargement was so prevalent and so great as to suggest a bovine tubercular infection. Of these children, 64.5 per cent had definitely enlarged glands and 14.5 per cent had lymphatic glands so enlarged as to be distinctly pathologic. The condition of the children in Rowe, in this respect, was little better.

VACCINATION.

Of 220 children over five years old (of Florida, Rowe, Monroe, Savoy and Richmond) examined, 128, or 58 per cent, had not been successfully vaccinated.

Omitting the children of Richmond, of 184 children examined, 119, or 65 per cent, had not been successfully vaccinated.

In the 8 schools of Savoy and Rowe (omitting 10 State minor wards, only 20 per cent of whom had not been successfully vaccinated), of 115 children, 87, or 76 per cent, had not been successfully vaccinated.

Of the 28 children who *had* been successfully vaccinated, 15, or 54 per cent, were of foreign parentage. It would seem that in the event of an epidemic, only our orphans and our immigrants would survive.

This widespread disregard of our State law is a serious problem. It is ignored not only by the parents and school authorities, but often by the physicians themselves.

At the Cummington, Middlefield and Becket fairs, of 330 children over five years old, the unvaccinated numbered from 52 to 62 per cent.

The popular attitude is conveyed by a little girl who told me that she did not need to be vaccinated because she went to a sisters' school. That vaccination has as important a relation to public health as the prevention of ophthalmia neonatorum appears to have been forgotten.

In England, France, Italy and Japan, vaccination is compulsory in infancy. In France, in the disorganized conditions of the late war, of nearly 300 children just arrived from the invaded areas, of whom I have personal records, only 2 were unvaccinated. These were two and three years old.

Unless the spirit rather than the letter of our existing vaccination law be enforced, we have no way of checking up our adult population. Many of these country boys and girls, potential victims of smallpox, move to town. Our ignorance of the proportion of this influx of unvaccinated people, who are unconsciously depending upon their immunized fellow citizens to protect them from an epidemic, is a serious danger. In the next census it would be of interest to collect statistics on vaccination.

Records of Examination of Children at Six Fairs, September, 1920.

PLACE.	Number.	PER CENT.				
		Normal Weight.	Under-weight.	Ten Per Cent Under-weight.	Twenty Per Cent Over-weight.	Not vaccinated.[1]
Middlefield,	56	27	46	23	4	52
Ware,	254	30	47	22	1	8
Cummington,	252	25	42	31	1	59
Becket,	30	27	27	37	10	62
Springfield,	202	24	40	36	0	22
Northampton,	402	24	46	29	1	21
Total,	1,196	26	44	29	1	25[1]

[1] Of 915 examined.

Physical Condition of 689 Children examined at Six Fairs, September, 1920.

PLACE.	TEETH (PER CENT).			TONSILS (PER CENT).		Adenoids, enlarged (Per Cent).
	Sound.	Carious.	Dental Care.	Enlarged.	Out.	
Middlefield,	15.0	63	23.0	15	17	8.0
Ware,	5.5	83	14.0	34	13	8.0
Cummington,	8.5	83	8.5	14	6	8.5
Becket,	10.0	61	37.0	7	24	3.0
Springfield,	15.0	70	18.0	16	22	12.0
Northampton,	12.0	79	13.0	15	12	9.0
Total,	12.0	75	16.0	18	15	9.0

Dental Condition of Children of Normal Weight and of those 10 Per Cent or more Underweight, examined at the Springfield Fair, September, 1920.

	Number examined.	TEETH (PER CENT).		
		Sound.	Carious.	Dental Care.
Normal weight,	38	20	63	18
Ten per cent or more underweight,	70	16	78	10

REPORT OF CHILDREN UNDER FIVE YEARS OLD.

Physical Condition of 221 Children under Five Years Old.

PLACE.	Number examined.	TEETH (PER CENT).			TONSILS (PER CENT).		Adenoids, enlarged (Per Cent).	Not vaccinated (Per Cent).
		Sound.	Carious.	Dental Care.	Enlarged.	Out.		
Uxbridge,	38	97	–	3	34	–	10.0	100
Hill towns,	65	82	18	–	17	3	11.0	100
Fairs,	123	54	34	–	16	5	7.5	93
Bedford,	17	(?)	–	–	13	–	(?)	100
	243	–	–	–	–	–	–	–

No attempt was made to classify the weights of the children under five. Not only are the weight standards for children under five years old unsatisfactory, but the clothing varied so much according to the weather, and to the place of examination, that any statistical report would have no value. At Uxbridge the children were weighed stripped; at Bedford, partially stripped; and at the fairs, of necessity, wholly dressed.

Children under One Year Old.

PLACE.	Number examined.	ENTIRELY BREAST-FED.		PARTIALLY BREAST-FED.		NEVER BREAST-FED.		ENLARGED TONSILS.	
		Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Uxbridge, .	28	20	70	4	14	4	14	9	31
Hill towns, .	12	7	58	3	27	2	17	–	–
Bedford, . .	11	7	63	2	18	2	18	2	18
Total, .	51	34	65	9	17	8	15	11[1]	27

[1] Of 40 examined.

REPORT OF SURVEY OF WILLIAMSTOWN SCHOOL CHILDREN, NOVEMBER, 1920.

In November, 1920, with the consent and co-operation of the superintendent of schools, and assisted by the school physicians, the district nurse and one or two volunteer helpers, all the public school children of Williamstown, with the exception of the high school pupils, were weighed and measured and given as comprehensive a physical examination as was practicable.

The physicians and their assistants met in a quiet, separate room given up for the examinations, and successive groups of children were dismissed from their classrooms, and passed through the physical examination. The children were weighed and measured in their usual indoor clothing. Shoes were not removed, as with so many young children the taking off and putting on of shoes would have taken more time than could be spared. As no correction has been made, heights are slightly increased, and as, in the case of the older children, the weight of the shoes does not, on an average, quite compensate for the corresponding weight for height increase required, in these cases the weights are graded slightly lower than would otherwise have been the case. The maximum error would, I believe, not be over three pounds. In the majority of cases it would be insignificant.

For the physician's examination, the children were stripped to the waist, unless an objection was felt by the child or his parent, which occurred in only two or three instances. The skin and scalp, teeth, nose, throat, glands, spine and posture were observed; a brief examination of the abdomen was made. The lungs and heart were examined by percussion and auscultation. No special tests were made of sight or hearing, so that "eyestrain" is here used to designate such gross defects of vision as crossed eyes, extreme myopia, etc.

Individual records for permanent reference were made for each child.

A statistical summary of these records follows: —

Report of Examination of School Children, Williamstown, November, 1920.

[Total children, 474; boys, 240; girls, 234. Children underweight, 358, or 75 per cent.]

SCHOOL.	Number of Pupils.	NORMAL WEIGHT.		UNDERWEIGHT.		TEN PER CENT UNDERWEIGHT.		TWENTY PER CENT OVERWEIGHT.	
		Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Cole Avenue, .	130	35	27	59	45.0	36	27.6	–	–
Spring Street, .	143	31	22	68	47.0	44	31.0	–	–
Hemlock, Sherwood and South Williamstown.	36	4	11	19	52.0	13	36.0	–	–
Southworth Street.	127	37	30	45	36.0	44	34.0	1	1.0
Broadbrook, .	38	8	21	21	55.5	9	23.0	–	–
	474	115	24	212	45.0	146	31.0	1	0.

SCHOOL.	ENLARGED OR DISEASED TONSILS.		ADENOIDS.		Carious Teeth (Per Cent).	Not vaccinated (Per Cent).
	Number.	Per Cent.	Number.	Per Cent.		
Cole Avenue, ...	45	35	9	7.0	85	11.5
Spring Street, ...	36	25	9	6.0	83	16.0
Hemlock, etc., ...	11	30	3	8.0	66	25.0
Southworth Street, ...	12	9	2	1.5	57	11.0
Broadbrook, ...	10	26	4	10.5	91	8.0
	114	24	27	6.0	77	14.0

Summary.

	Number examined.	PER CENT.							
		Normal Weight.	Underweight.	Ten Per Cent Underweight.	Twenty Per Cent Overweight.	Bad Teeth.	Tonsils.	Adenoids.	Eyes.
Boys,[1]	240	23	50	27	–	81	27	6	13
Girls,[2]	234	25	39	35	–	72	23	5	7
Total, ...	474	24	45	31	–	77	24	6	8

[1] Five to fourteen years old.

[2] Five to fifteen years old.

Analysis of 112 Children of Normal Weight.

	Per Cent.
Teeth: —	
Sound,	21
Carious,	70
Dental care,	14
Tonsils, enlarged or diseased,	21
Adenoids enlarged,	5
Eyestrain,	5

Analysis of 60 Children 15 Per Cent or more Underweight.

	Per Cent.
Teeth: —	
Sound,	4
Carious,	82
Dental care,	13
Tonsils, enlarged or diseased,	35
Adenoids, enlarged,	8
Eyestrain,	16

FRENCH AND BELGIAN REFUGEE CHILDREN.

For purposes of comparison, the following analysis of French and Belgian refugee children examined on arrival in Paris, France, during the summer of 1917, from the invaded areas, is of interest.

FRENCH AND BELGIAN REFUGEE CHILDREN.	Number examined.	PER CENT.		
		Normal Weight.	Under-weight.	Ten Per Cent or more Underweight.
Girls, 3 to 16 years,	100	29	32	39
Boys, 3 to 16 years,	161	36	35	29
Total,	261	33	33	33

Of the above, 53 per cent were found to have carious teeth, 20 per cent had enlarged tonsils, and .7 per cent were not vaccinated.

These children were weighed without clothing or, in the case of the older children, draped only in a small sheet. Allowance is therefore made for clothing according to the following estimate of Bowditch: —

Boys.	*Girls.*
5 years, 2.8 pounds (1.2K).	5 years, 2.8 pounds (1.2K).
7 years, 3.5 pounds (1.6K).	7 years, 3.5 pounds (1.6K).
10 years, 5.7 pounds (2.6K).	10 years, 4.5 pounds (2.0K).
13 years, 7.4 pounds (3.3K).	13 years, 5.6 pounds (2.5K).
16 years, 9.7 pounds (4.4K).	16 years, 8.1 pounds (3.7K).

As, unfortunately, the coincident heights of this group of children were not obtained, the weights used as standard are those compiled by the Children's Bureau at Washington as average for age. While their standard is a little lower than the mean of the Child Health Organization table used elsewhere in this report, yet the relatively lower average height of the French race tends to lessen this discrepancy.

It must be remembered that, where any selection was made in choosing the children to be sent out of the army zones, it was in favor of the more delicate and ill-nourished children. This is particularly true of the older children.

It is interesting to note that here, as elsewhere abroad during the war, the girls show a greater relative loss than the boys. (*Cf.*, Dr. René Sand, Children's Bureau Publication No. 60, Conference Series No. 1.)

RECOMMENDATIONS TO WILLIAMSTOWN.

A study of these figures has more than a passing interest. Dr. Thomas Wood of the National Council of Education quotes 20 per cent as the average number of malnourished school children in the United States. By "malnourished" he means children who weigh 10 per cent or more less than they should for their age and height. In Williamstown 31 per cent of the school children come under this class, or 146 children. Six of these children are 25 per cent or more underweight.

A twelve-year-old child who weighs 30 pounds less than she should is an alarming problem. Yet, instead of having every effort made to overcome the cause of her condition, she is too often subjected, in addition to the inevitable strain of adolescence, to the overwhelming additional strain of school life, with its exertion, its confinement, its excitement; hastily snatched breakfasts; cold, unappetizing lunches; and suppers often left uneaten because the child is too tired to be hungry.

What can be done for these seriously undernourished children?

First, look for the cause in each individual case. An analysis of 60 children 15 per cent or more underweight, as compared with 112 children of normal development, shows that 82 per cent of the undernourished children have decaying teeth, as compared with 70 per cent of the stronger children. Start with the teeth. Bad teeth are obstacles to well-being in several ways. There is constant absorption of bacteria and decaying matter through the tonsils, and through the digestive tract as everything swallowed is contaminated. There is danger of absorption into the blood stream through root abscesses, which are often neglected in children and may cause permanent injury to the heart or kidneys; also rheumatism, as well as infection of the tonsils and lymphatic glands. And, most obvious of all, a child with aching teeth cannot chew his food properly, and, as, in the slogan of the dental hygienists, "the stomach has no teeth," digestion and assimilation cannot go on as they should. All these arguments apply as well to the first teeth as to the second. The fact that they must be lost is no good reason for allowing the first set to leave life-long damage behind; and how often are the six-year-old molars, the most important of all the permanent set, allowed to decay under the mistaken impression that they are "baby teeth."

The next most obvious defect in these undernourished children is enlarged or diseased tonsils or adenoids. Oxygen is indispensable to health, and it makes no difference whether air is shut out by closed windows or by an obstructed breathing space, anemia, narrow chests, unrestful sleep, easy fatigue, loss of appetite, and dulled mentality are the consequences. The teeth should first be attended to, and, in some instances, the tonsils, no longer irritated by constant infection, may subside spontaneously. At all events, tonsils should not be removed until such a source of infection of the wound, as decaying teeth, has been eliminated.

Diseased teeth and tonsils are the most easily detected defects. Next, more obscure causes of strain should be sought. Eyestrain is often neglected, and in school children especially may be a constant nervous irritation, using up the energy that should be going to build up a healthy body. A child who is seriously undernourished should have his eyes examined by an oculist. In Williamstown there were three times as many children with defective vision in the malnourished group as among the normal children.

A chronic suppurative condition, such as a discharging ear, may be a cause of ill health. If local treatment does not clear it up, the child's general health should be built up, at all costs to school routine, until the condition can be overcome.

Further causes may be an unsuspected heart disease or an early tubercular infection. The body of a child 20 or 30 pounds underweight deserves much more consideration than his mind. Every such child should have a careful physical examination.

After the physical obstacles to normal nutrition have been overcome, the child's habits, particularly of eating and sleeping, are most important. Children who subsist on dry bread and coffee three times a day cannot be expected to develop under any amount of medical care. We cannot go into their homes and cook oatmeal for breakfast, but we *can* see, through the schools, that they get soup or cocoa or milk with their lunch. After they have appreciated the difference, they may insist on a substitute for their coffee at home. The teachers should be urged to impress upon these undernourished children the importance of diet. If they can be really interested in co-operating, a great deal can be accomplished.

Lastly, a child must have enough sleep. If he goes to the moving-picture house several times a week, goes to bed late and overstimulated, sleeps with a restless brother, has his windows closed, he cannot make up the energy lost in a strenuous school day.

I can think of no more profitable work for a school nurse, and every school should have at least a part-time school nurse, than to make an intensive study of all the malnourished children, and to try to get their co-operation, as well as that of their parents, in overcoming the causes of malnutrition which she finds.

Conclusions.

The problem of how to combat this alarming prevalence of malnutrition, with all that it implies of neglected hygiene, neglected teeth, neglected incipient disease, must depend upon local conditions. In such a center as Williamstown, where good medical oversight is available and lay co-operation can be hoped for, it would seem that a knowledge of conditions must be sufficient to cause a reform.

In the hill towns, with no nurse, and the nearest doctor 25 miles away, outside help seems imperative. The energy and enthusiasm of the rural teachers cannot be overestimated. Many of these young women have, on their own initiative, contrived to prepare hot lunches for the children over the schoolroom stoves. Those pupils who tramp several miles over wind-swept roads arrive with frozen lunches. Those who go home, often run both ways and bolt a warm meal, which they cannot digest. It is hard to decide which is worse.

For medical aid, traveling units of pediatricians, nutrition workers, dentists, eye, ear, nose and throat specialists and nurses, should be provided, to hold clinics periodically; or else traveling aids, to conduct groups of children needing treatment to the nearest town where dispensary care can be provided. More co-operation between small towns would furnish health centers accessible to many who are cut off from the city dispensaries.

We need more health centers — migratory, if necessary — and we need more nurses, many more.

Explanatory Note.

Weights. — The standard used for weights was that of the Child Health Organization, — weight for height, age and sex. While the author realizes that these weights and measurements are not sufficiently accurate to be used for anthropometric data, yet for a comparative picture of local conditions they appear to her to be of value.

"Normal weight" was considered anything between this standard, and 20 per cent above it.

"Underweight" included all children between normal and 10 per cent below it.

"Ten per cent underweight" included all children 10 per cent or more underweight. As shoes were not removed, the weight per height ran a trifle higher than it otherwise would, except in the case of barefoot children.

Special Tests. — No special tests were made of vision and hearing. Eyes were considered defective when they showed such gross abnormalities as strabismus, nystagmus, extreme myopia, unilateral amblyopia; and also, when, associated with conjunctival injection, the child gave a history of frequent headaches, blurred vision, etc. In the majority of cases, no correction by glasses had been made. In some cases the glasses were obviously inadequate.

Under "ears" were included visible suppurative otitis media or deafness.

Nasopharynx. — Tonsils were classed as "enlarged" only when so large as to be definitely obstructive or visibly diseased; adenoids, only when they visibly interfered with respiration.

"*Dental Care.*"— This indicated that cavities had been filled. Prophylactic care was so rare as to be omitted from the tables.

"Sound" teeth indicated teeth which had not decayed.

"*Not vaccinated.*"— Children were classed as "not vaccinated" when they had never been vaccinated or the vaccination was not successful.

Cardiac and Pulmonary. — While heart and lungs were examined as carefully as possible, it is felt that as one such examination was insufficient to distinguish functional and transitory heart murmurs from pathological conditions, or a lingering bronchitis from tuberculosis, it would be misleading to give figures on the findings.

Orthopædic. — This included chiefly poliomyelitis cases, scolioses or marked deformities of rickets.

SYPHILIS AND PREGNANCY.

By William H. Watters, M.D., Visiting Physician, Massachusetts Homœopathic Hospital, Boston, Mass.

FOR a number of years past it has been my fortune to be rather intimately connected with a hospital having a maternity department of about eighty beds and a large out-patient obstetric division.

For a considerable time we have followed a routine (being one of the first institutions, if not the first, in the country to do it) of procuring blood from every prospective patient for the purpose of doing a Wassermann test. Having found definite evidence of syphilis, we have advised intensive treatment and have, in a considerable number of cases, been able to watch the results of this treatment for a varying period of time. Both laboratory tests and treatment have been made under the direction of the same observer, and in this manner changes of one form or another have been more promptly noted.

In taking up the subject, it divides itself naturally into two parts: first, diagnosis of syphilis in the pregnant woman; and, second, the proper treatment once the condition is recognized. The diagnosis of the disease may be appropriately considered first.

Very rarely have we encountered prospective mothers who have shown acute or active lesions of the disease. When they have been so found, the recognition of the infection has been relatively easy. Unfortunately, in the female, syphilis is often contracted, and the early stages passed without any actual realization of its presence by its possessor. Clinical history is accordingly very undependable, when obtainable, being of much assistance, but, when not secured, by no means negativing the infection. In maternity patients, also, the possibilities of exposure are, of course, always present, and so here, again, clinical history avails but little.

Whenever we can obtain a history of previous miscarriage, stillbirth or early and obscure child death, our task is much easier. Inquiry is also always made concerning the husband, whether an alcoholic, his habits and health. Sometimes this is of help, but usually this esteemed individual is like Cæsar's wife,—beyond suspicion (by the wife).

Symptoms and clinical history being negative, we now have at our disposal the more recent diagnostic aid, the Wassermann reaction. This test has probably received more study than any other of our later means of precision. Concerning the technique of its performance, there exists a greater diversity of opinion than about any equally recognized test.

Almost every laboratory worker has his own favorite method which is regrettably different from that of almost everybody else. Here in Massachusetts we have tried to obtain uniformity in a very commendable manner, but even here each of the State-recognized laboratories runs one or more duplicate series in addition to the one used in common by all. This habit is a good one, however, as it serves to check up a number of different methods with a uniform one.

Granted a standard form of procedure, are we justified in saying that all positive cases by this method justify a definite diagnosis of luetic infection irrespective of clinical symptoms? It must be remembered that the Wassermann reaction is a non-specific reaction, the exact *raison d'être* of which is not yet fully understood. As such, our "historiless" and symptomless diagnosis, based wholly and exclusively upon a positive Wassermann (particularly not a very strongly positive), must be made with much caution in any case encountered. Particularly true is this of pregnancy cases, when many of the bodily functions are altered and far from normal. The possibilities of absorption into the blood of waste, foreign or otherwise abnormal products must be carefully borne in mind as giving temporarily deceptive results.

These conditions have proved to be troublesome with us. In our first studies, working diagnoses of syphilis were made at times upon a single, perhaps mildly, positive Wassermann. In an occasional one such blood taken a few days, weeks or months later would be negative and similar tests would be negative indefinitely after delivery. Such cases were accordingly classed as false positives.

Again it was early noted that occasionally a patient under observation would show several moderately positive reactions before delivery and uniformly negative ones after the puerperal period. The question then came, were these also false positives or did the condition of pregnancy stir up an old syphilitic infection that was at other times latent? In the light of our present knowledge we can only say that probably each of these explanations is at times true.

In my laboratory two antigens are used, — an acetone insoluble or lipoid and a cholesterinized one. The first is frankly less delicate than the other and undoubtedly will pass over a number of syphilitic cases. The second will give a much higher percentage of positives, but will also at times give positive results in some cases where most searching clinical history and examination offers not even suspicion of lues.[1] We take advantage of this divergency in the following manner: —

Any blood that uniformly gives negative results with the more delicate or cholesterin antigen is classed as negative, and any one giving similar positive results with the lipoid antigen is placed as positive. In other words, our positive serological diagnoses are made with a less delicate antigen and our negative ones with a more delicate one. By this means, we believe that we make fewer errors than by using any one form. This leaves an intermediate or uncertain group in which the less delicate antigen is negative and the more delicate one is more or less positive. Such a group must be viewed with suspicion, and in our maternity cases treatment is not instituted unless clinical history, symptoms or further blood tests make a diagnosis of lues more definite.

Upon such grounds then rests our diagnosis in the pregnant woman.

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[1] As a result of studies in the Evans Memorial made by Dr. Belding upon maternal blood, certain parts of the technique as outlined above are modified as follows. The usual method of testing with the State antigen and with a second highly sensitive control antigen is employed. All cases giving positive results are then further tested by the ice-box method, using both a sensitive and a less sensitive antigen. This method experimentally has proved satisfactory in largely eliminating the occasional false positives that have been encountered heretofore.

In a general maternity hospital, possessing both public and private wards, what percentage of patients are those presumably syphilitic?

Dr. D. L. Belding, of our Evans Memorial for Clinical Research, in an unpublished article reports the results of his collection of statistics from the Robinson Maternity, from his own laboratory and from mine, and other data obtained elsewhere.

Some of the tables may be of interest.

TABLE I.

HOSPITAL.	Location.	Per Cent Positive Wassermanns.
Cook County,	Chicago,	11.30
New York Lying-In,	New York,	3.05
East End,	London,	3.90
Kings County,	Brooklyn,	8.00
Sloane Maternity,	New York,	9.10
Robinson Memorial,	Boston,	9.70

Whether the lower percentage from the New York Lying-In and the East End hospitals might be increased by more uniform methods or not, it will appear very evident that the problem of the syphilitic in our maternity institutions is a very active one, involving about one patient in every ten or fifteen admitted. Let me present another of Dr. Belding's tables taken from the Robinson Memorial. This deals with the race incidence of the disease.

TABLE II.

NATIONALITY.	Per Cent Cases.	Per Cent Syphilitics.
Negro,	1.11	36.00
Scotch,	0.97	22.73
Austro-German,	0.75	17.65
Armenians,	0.84	15.78
Swedes,	1.46	12.12
Greeks,	0.97	11.77
American,	56.50	9.63
Irish,	8.05	8.78
Canadians,	9.10	7.73
Jews,	13.63	5.86
English,	3.85	5.75
Italians,	0.75	–

Undoubtedly this will undergo modification as the total number of cases increases from year to year.

Still another table deals with the station in life of the patient as indicated by the ability to pay for accommodation.

TABLE III.

ROOM, COST PER WEEK.	Per Cent Cases.	Per Cent Syphilitics.
$17 to $21,	16.15	8.52
$12 to $15,	71.80	9.00
Free to $10,	12.05	10.27

There is also a table dealing with the station in life of the husband.

TABLE IV.

OCCUPATION OF HUSBAND.	Per Cent Cases.	Per Cent Positives.
Skilled labor,	44.0	34.6
Unskilled labor,	32.3	42.8
Mercantile,	11.9	12.2
Salesmen and agents,	2.2	4.5
Army and navy,	3.5	2.0
Professional,	1.9	1.5
Shop proprietors,	1.9	.5
Unmarried women,	1.8	1.0
Agriculture,	.8	.5
Unemployed,	.1	–

Assuming, then, that in general about one prospective mother in every ten or fifteen has a luetic infection "what," in the language of the old Tweed ring, "are you going to do about it?" From the sociological standpoint the question is an acute one.

P. C. Jeans (Translated American Child Hygiene Association, 1918, IX, 146) states that a minimum of 10 per cent of marriages involve a syphilitic individual, 75 per cent of the offspring from such marriages are infected and 30 per cent of the pregnancies terminate in the death of the fetus at or before term, and of those born living, 30 per cent die in infancy as against 15 per cent under normal conditions. Only 17 per cent of all pregnancies in syphilitic women result in children that survive the period of infancy.

The Utopian method of solving the problem would be universal Wassermannization, with intensive treatment for positive cases and prevention of sexual union in any such positive individuals. In our present democrátic life this is of course impossible, although I believe that negative physical and serological tests should be a prerequisite of every marriage. At present we must face conditions as they are, however we may strive to improve them in the future. Our mode of attack along the congenital and maternal line at the Robinson Memorial Maternity is somewhat as follows: —

Each prospective patient is encouraged to come to the hospital as early in her pregnancy as possible. At this time, full history is taken and examination made. Blood is taken for Wassermann test. If the test is positive, the name of the patient is given to the social service department, by whom the family antecedents are investigated and the patient brought back for further study in the luetic department. Here she is carefully questioned and studied to obtain any possible venereal history or symptoms. If such are obtained, she is placed upon intensive treatment at once. If there is no history or symptoms, the Wassermann is repeated. When this proves to be persistently positive, the husband is interviewed. To one unaccustomed to this form of work it will be surprising to note the frequency that adequate venereal history may be thus obtained by the use of tact, common sense, and good temper. Many is the time when we have seen men entering the clinic in such a way as to almost cause apprehension for physical harm, leaving it in a most subdued and grateful manner after a short private conversation.

The intensive treatment that we follow consists of six weekly intravenous injections of arsphenamine, twelve weekly intramuscular injections of salicylate of mercury and daily ingestion of protoiodide of mercury and potassium iodide. This covers a period as long as we usually have before delivery, but whenever we do have more time the course is partly, at least, repeated. When we first began the intravenous injections we feared possible induction of miscarriage as a result of the drug action. Now after a number of years' experience with it, during which time we have never been able to notice the slightest tendency toward such action, our fears are no longer active. The drug used is our own State product, prepared in a 1 per cent solution of freshly distilled water and neutralized with a (not necessarily fresh) 15 per cent solution of chemically pure caustic soda, preserved (for weeks, at times) in a paraffin bottle.

The dose begins with 1 decigram for each 60 pounds of weight and increases to a maximum of 1 decigram for each 30 pounds. The patient has a practically empty stomach and bowel. Sufficient is made up for the entire clinic period of two or three hours. Gravity method is used without preliminary saline, and the Kauffman syringe is invariably employed. Reactions of any kind are very exceptional.

Patients return home immediately after the treatment and are instructed to take a light diet for the next twelve hours with an abundance of water.

The salicylate of mercury is suspended preferably in animal oil (goose), often in a vegetable oil, never in a mineral oil on account of varying degrees of solubility. The dose varies from one-half to 1 grain at weekly intervals. We possess a distinct belief, also, in the efficiency of mercury taken by mouth when mixed with a readily soluble vehicle; such a vehicle we find in sugar of milk. Tablets of protoiodide, one-tenth grain, are thus prepared and in many cases a surprisingly small number give evidence of distinct mercurialization.

Inunctions are very seldom used on obstetric cases. Potassium iodide is advised in older cases for its reputed effect of softening gummatous deposits and opening up the entrenched spirochæta to the attacks of the other agents. Alone it possesses no curative powers.

Thus, in brief, is the treatment, not differing essentially from the course prescribed for other forms of the disease. By it two things may be accomplished: first, the eradication, so far as possible, of the disease in the mother, thus rendering her less liable to infect the child; second, the treatment of the child already infected in utero, through the channel of the maternal blood, the placenta and the fetal blood. Concerning the success of the first aim, there can be no question, as many cases indicate. About the second, however, while a number of instances seem to bear this out, sufficient data have not yet been accumulated to justify definite claims.

Allow me to quote corroboration of these claims.

Lisser states that (Jour. A. M. A., Sept. 17, 1918, p. 850) intensive treatment of every syphilitic mother during pregnancy will (*a*) prevent miscarriages, premature births, and stillbirths due to syphilis, in the vast majority of cases; (*b*) produce a live child at full term who will not develop congenital syphilis, in the majority of cases. Such treatment does not interfere with the normal course of pregnancy, labor or puerperium. Lisser urges that such antenatal therapy should be widely advocated by medical men of prominence and influence, in order that it may become a well-established routine procedure. Immediate widespread adoption of this method will insure a large increase in the future population of the world.

Williams says (Bull. Johns Hopkins Hosp., pp. 31–141) that among

157 untreated syphilitic patients, 52 per cent of the children were either born dead or presented some evidence of syphilis at birth; that among 103 inefficiently treated cases, 37 per cent were so diseased; and in a group of 163 where the treatment had been efficient, including both arsphenamine and mercury, only 7.4 per cent showed evidence of disease. These results are more favorable than those reported by Marcus, who says that 90.2 per cent of untreated mothers have syphilitic children, 82.3 per cent of mothers treated prior to pregnancy have such, while 46.6 per cent show syphilis where treatment has been given during pregnancy.

Our results at the Robinson Maternity are entirely in accord with these figures. Many cases, showing positive Wassermann and giving a history of repeated miscarriages and other luetic symptoms, have received thorough treatment over a period of several months and have been delivered of normal-appearing children showing repeatedly negative Wassermann over a period of months. Of course such a result is not invariable, as not a few children have shown syphilitic lesions after birth. These have been particularly noted when the treatment has been started late in the pregnancy and presumably after the child had been extensively infected.

Perhaps the most striking feature of the whole subject has been the almost complete absence of miscarriage or birth at term of a macerated fetus. Thus far I have been able to locate but one such case. This, coupled with the fact that seldom have any of the infants shown signs of active lesions at birth, even when they have appeared weeks later, seems to strengthen our theory that we can in this ante-partem manner treat the child easier than in any other way after birth.

In conclusion: —

1. Routine Wassermann tests should be instituted in all maternity cases.
2. From 5 to 10 per cent of all cases will prove to be syphilitic.
3. Once a definite diagnosis is made, intensive treatment should be instituted, the earlier in pregnancy the better.
4. The danger to the patient is no greater than in non-pregnant persons.
5. If this is carefully followed out, the death rate will be much reduced, and syphilis will be changed from the most prolific cause of fetal death to one of relative infrequency.

HOW CAN OUR WORK IN FOODS BE MADE MORE VITAL TO THE HEALTH OF THE CHILD?[1]

By Lucy H. Gillett, Nutrition Advisor, Association for Improving the Condition of the Poor.

SHOULD we be satisfied when Mary says she has made biscuits for supper, when Jane has made soup, or when Harriet has made gingerbread? These isolated dishes do not cure nor prevent pale faces, they do not develop strength in the girls that are weak, neither do they help those who are slow in their grade work to concentrate better in the classroom. One glimpse after another into the home life of the girls only serves to strengthen the impression that they are getting much in home economics that they cannot apply, and that this is crowding out much they need to apply.

It is surprising to find underweight and malnourished children in all types of families, — in the families of those who have plenty of money as well as in families of limited means. One cannot judge by the appearance of the face. The physician frequently finds that a plump, rosy face is supported by a malnourished body. Figures from various cities show 20 per cent of the children underweight, and underweight is not the only index to malnutrition. In many instances the children are in good condition until they reach the age of twelve or fourteen, when they begin to get thin and pale and are more susceptible to disease.

Do girls know that the enthusiasm and freshness of youth, which every girl wants, may be maintained or destroyed by their daily habits of eating? Rosy cheeks and good teeth are in a large measure dependent upon the food eaten. Does each girl know whether she weighs more or less than she should, so that she may regulate her diet accordingly, or whether her brothers and sisters are of average weight? If not, is there some physical defect that should be remedied so that the food may do its work? I do not wish to suggest that the cookery teacher is responsible for the physical condition of the children, because she has neither the time nor training and neither is it her responsibility. This is distinctly the problem of the nurse, the physical director or the doctor. But the relation of food to health and its selection with health in mind is our problem, and we do not want to waste time trying to build up with food conditions that are due to other causes. The teaching of foods provides an excellent opportunity to work in co-operation with the nurse, doctor, or the physical director.

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[1] Read before the annual meeting of the Eastern Arts Association, April 2, 1920.

In nutrition in social work we are meeting in individual homes the problems teachers are meeting in group work. In one of our nutrition classes, where we were trying to bring 12 or 15 underweight and malnourished girls into good condition by teaching and persuading them to follow proper food and other health habits, the girls said, "We have had this in school, but it never occurred to us that it had anything to do with our being underweight." Is it not possible to make the work more personal?

Mothers in families where we have been asked to make suggestions concerning the food frequently tell us that children are getting on much better at school after the food has been adjusted. Does the work as taught in the cookery class help the children to concentrate and to study better? Does the classroom teacher note a mental improvement in the children who are taking cookery?

To be able to meet the problem in a family and to apply it to health, the girl must know foods appropriate for children of all ages; she must know how to plan the meals so that one meal will provide the things needed by each member of the family; she must know how to adjust the meals to suit the income of the family and how to do the marketing for these meals.

In teaching a cosmopolitan group, such as we find in our public schools, we must decide which things are fundamental and at the same time most useful. We want such information as may be taken home, — not only the kind that is taken home in a cup, but the kind that will help to lay a good foundation for the health and strength of the whole family; the kind that may be used in the future as well as the present; the kind that applies to all nationalities.

Has any teacher ever said that there is not time to teach everything? There is a big question in my mind as to whether there is time in the grades to teach girls that foods are composed of proteins, fats, carbohydrates, mineral elements, vitamines and water. These are surely fundamental facts, but are they the facts that can be used to best advantage?

Children delight in learning these names; they can tell in a superficial way the value of each in the body. But if you were to ask any woman who, as a girl, had this information in the grades of our public schools what application she really makes of this information when a real test arises, I wonder whether you would not be forced to admit that the information gained does not justify the time and energy spent upon it? I would like to raise the question whether the subject of the technical composition of foods could not be left to the high schools, where enough time may be put upon it to give a working knowledge and where the children are old enough to apply the knowledge intelligently? Some may say that so few children go to high school they want them to get it in the grades. But if we cannot give them *everything* in the grades, and if this crowds out things that are more important, are we not forced to eliminate something and put the emphasis on the question of value? We cannot teach chemistry or advanced mathematics in the grades. Why food composition?

Perhaps a teacher feels that she is simplifying the teaching of food values and jumping the difficulty by classifying foods into muscle builders, energy food, body regulators, etc. In this it seems to me we are easing our conscience and fooling ourselves without educating the children. In the first place, *are* we giving the correct impression by referring to a certain class of foods, presumably high protein foods, as muscle builders? Is the protein of any value in the growth of the muscles if the mineral elements and the vitamines are not also present? Are they not just as important in the growth of the muscles as the protein? Children soon assign values of their own, too, in spite of our cautions. They reason like this: If protein builds good strong muscles, then is not that the thing to be desired? And, if the time comes when they have to economize, won't they think the protein the thing above all else to include because of muscles and strength? In 100 dietary studies, in which accurate records were kept and the food values of the diet were calculated, in no instance was the protein deficient if the energy was adequate; but the thing that was holding boys and girls back in their development, the thing that was causing pale faces and weary bodies, was the lack of the mineral elements and the foods containing vitamines. We find malnutrition more frequently in children whose diets are rich in protein and low in vegetables than where protein foods are deficient and vegetables abundant. Why overemphasize protein foods by referring to them incorrectly as exclusively muscle builders?

What are the important things of common interest? We all need milk, vegetables, fruit, grain products and fats normally. (Abnormal cases are problems for a physician.) Meat, fish, eggs and sugar are optional. Why not think in terms of types of foods, the planning of meals to provide these foods, the different foods to use at different seasons of the year, the amounts of each type of food needed by each member of the family for a day, and then a week, to make up the weekly grocery order, of the purchasing of these foods, of the relative economy of each food as compared with other foods in that type?

This will help to solve the difficulty that often arises because of nationality. People of all nationalities, of all ages, and of all occupations need these same types of foods, and from each type may be selected foods preferred by each. Each nationality could learn from the other and neither would feel that it was having something forced upon it. By showing respect for and acknowledging the good that is in all diets there is sure to be an interchange of food habits which will be one of the ways of amalgamating the people living in one country.

Do the lessons with vegetables leave with the girl a firm conviction that the vegetables are necessary for health even to the point of making her learn to like them? Is every girl in the class so convinced of the value of vegetables that she is going to have at least two vegetables in her diet every day? Does she know at what age children should begin to eat vegetables and that it is very important that they be persuaded to learn to like them early in life? Does she know which ones they should not eat? Does she know which vegetables to buy to get the most food value for her money if she has to economize? Does she know that vegetables are very valuable in overcoming constipation, and that usually it may be corrected or prevented by proper food? Does she realize its seriousness if allowed to continue? Does she know that green and leafy vegetables have different qualities from the root vegetables, and that she should have some green and leafy vegetables at least two or three times a week and as much oftener as possible? Does she know which the green and leafy vegetables are? When leafy vegetables are scarce in January, February and March, will she know what to do to safeguard her health, provided the cost of the green vegetables prohibits their use?

Remembering that it is usually easier in the fall to begin with foods in season, we will suppose, for example, that vegetables are discussed in September. Would it not be possible to emphasize and to prepare the leafy vegetables that are most abundant in the fall, then later in the winter to emphasize cabbage and those leafy vegetables to be found all winter, and, in the spring, beet greens and dandelions or other spring greens? Children are not going to remember from September to February what to do. They must learn by doing. It may be easy to teach vegetables in the fall, but the real test for the girl comes when they are scarce, and this is when she needs most help. If every teacher realized how many children are really suffering from malnutrition because of the lack of vegetables, I believe none could rest until she had planned to help her girls to get vegetables into their diets not six months a year, but twelve months. They should at least be taught to use more milk when green vegetables are unobtainable.

The importance of milk is usually strongly emphasized. Children know that it is essential for growth. They usually know of what milk is composed, but I wonder how many girls increase the amount they have been drinking because of this knowledge. Which is more important (provided there is not time for both), to know the food composition of milk, or to learn to use at least two cups or more a day? Are we content and elated when we hear that one or two children or, perhaps, 75 per cent of the children are drinking more milk? The milk that 19 children drink will not help the 20th who perhaps needs it most.

Do they know that milk is a food whether taken as a beverage or in cooked form and that when we say a quart a day, some of this will probably be taken in food prepared for the family? We frequently hear intelligent, well-informed people express surprise in learning that the food value of milk for adults is the same whether cooked or uncooked. Do they know how to get even a full quart into the diet in cooked form if necessary?

Do they know that milk helps to strengthen the teeth, that it helps the heart to do its work, and that it helps to steady the nerves? And that no other food can supply the same qualities in such large amounts? Do they know how much milk a child one year old should have? Five years old? Ten years old? And it is especially important to know how much milk is required by the whole family.

Since we find tea and coffee used when milk should be given, could not a discussion of tea and coffee without the preparation of the beverages be introduced at this point to good advantage? If we are emphasizing the health side of food, why denounce the coffee and then proceed to teach children to make it? We consider the tea and coffee habit one of the worst food sins of children. We find the tea and coffee habit so well established that children often go to school with only tea or coffee and bread for breakfast. Both teacher of cookery and the grade teacher can do much in overcoming this tea and coffee habit.

Doubtless every teacher does say a great deal on the subject, but how many say it with such force and personal application that children give up tea and coffee? These things have to be repeated many times, and said in a tone that carries conviction, for learning good food habits is like learning a multiplication table. It frequently takes us from six to eight and even more visits to persuade children to give up coffee entirely, but the chief value in saying it is in getting results.

In a similar way the subjects of fruits, grain products, fats, sugars, eggs, meat, fish and other foods might be discussed. There is the value of grain products for "vigor and vim," as "Cho Cho" says; the relative importance of the cereals with and without the outside coating removed; the various ways in which the cereals may be introduced into the diet other than as a breakfast cereal, as in soups, breads and puddings. The need of considerable fat in the diet should be emphasized in the light of more recent experiments, but the evil of fried foods cannot be too strongly urged. The harmfulness of sugar taken in concentrated form, except at the end of a meal, with appropriate ways of introducing it in diluted form, and the undesirability of meat more than once a day, especially for children, and then only in small amounts, are only suggestive of the many things the children need to practice daily if they are to be healthy.

After each girl realizes the importance of the various types of food in the diet she has a problem at home which we are apt to overlook. This is the planning of and the introduction into the family meals of food she and the rest of the children need.

The average income does not warrant many extras, and father says he wants something more substantial than creamed soups, cereals, puddings and other things that are good for children. One dish must frequently provide the requirements for the mother, father and all the children ranging in age from one to sixteen years. The new dishes must be built into those the family already has. And the girl has to meet this problem. Many families cannot afford two courses, and it won't harm those who can afford three or four or even more to know how to plan one-dish meals. Any one who has tried to stretch a $20 or even a $30 income to cover the cost of food, rent, light, fuel, clothes, and other expenses for a family of five is doubtless aware that in such families the dessert is a Sunday treat.

Many, many children, many more than we realize, are going to school without breakfast or with only a very meager one. This may be because the mother is indisposed, it may be due to child discipline, but a proper breakfast cannot be too strongly emphasized. A proper breakfast need not be expensive. It may consist of bread and milk. If the grade teacher knew that her work would be easier if children had eaten a good breakfast, she might be glad to add her word to that of the special teacher, thus reaching boys as well as girls. We find that when the same idea is urged by two, or better still by three, people interested in the same family, but from different points of view, the results are much more satisfactory.

Then there is the luncheon purchased away from home either at noontime or recess. How few girls realize what they are doing for themselves when they choose those pickles, ice cream cones, sodas and doughnuts.

What kind of suppers do the children have? Are they simple but nourishing? We often find children who are restless at night sleep calmly and peacefully when the meat is taken out of their evening meal. They have better control of their nerves the next day, do better work at school, and are less irritable.

Not only is it necessary to give suggestions concerning the meals, but it is especially necessary to urge regularity of meals, with no eating between meals, eating slowly, and only light exercise after meals.

One word with regard to insisting on maximum standards before the whole class. One day a thin-faced little boy asked how much he should weigh. When told, he looked down at the toe of a shoe that was far from new and said sadly, "Then I'm 20 pounds underweight?" He was asked if he drank milk and he said, "No, mother used to get a quart, but the baby had to have all of that." "Don't you suppose you could have just two glasses a day?" he was asked. And he said, with tears in his eyes, "The baby died last week and perhaps I could have some now." The friend to whom this boy was talking did not say, "You tell your mother you must have a quart a day," because she surmised the problem in that home. We all, I am sure, would hesitate to urge the maximum if we knew the conditions were unfavorable. It seems to me it is far more considerate to urge the minimum in all cases and advise more if possible.

After the planning of the meals, the grocery order is supposed to follow; but if meals are properly planned, would not the grocery order partially precede the meal planning? Many women buy from day to day. Too many buy from meal to meal. This is poor economy and leads to an improper diet. In planning food, the amount of milk, vegetables, grain products, fruit and fats that are required by the family should be the basis, then the combining of these foods into meals, with the addition of such amount of meat, eggs, fish, etc., as the family may need or may desire or can afford. Would it not be better to plan market orders a week in advance? In many instances, planning ahead has not only saved the health of the children by stretching the purchasing power of the dollar, but it has frequently saved a family from debt. I wonder how many realize what a minimum grocery order looks like?

Then there is the question of economy. We frequently hear girls say, "Oh, yes, we learned how to do that at school, but we can't afford to make it." An egg or milk adds nourishment, or, perhaps, muffins are made at school when eggs are cheap. Mary would like to have them when eggs are 10 cents apiece, and she does not know how to use this same muffin recipe without eggs. Three eggs a week for the baby is all that many families can afford when eggs are $1.20 a dozen. If the recipes are to be tried in homes where they are most needed, then we must suggest how they may be adapted to suit varying incomes, using cheaper fats where possible and even water for milk.

Are our directions such as will necessitate the fewest possible utensils and those the least expensive? Some of our cities have school kitchens beautifully equipped. It is a joy to the girls to work in them, but, even though the equipment is complete and a good example of what a well-furnished kitchen should be, would it not be possible to play a game occasionally to see with how few utensils we can get along? To see which ones are dispensable, to devise substitutes for double boilers, for egg beaters, for rolling pins?

There is need for urging cleanliness and sanitation; especially necessary is it to urge separate plates, cups, spoons, knives and forks. There is need, also, for emphasizing cleanliness in the care of food, such as putting food under cover away from dust and flies, for emphasizing danger in handling bread, etc.

The material that might be given is almost endless. No teacher feels that there is time to give it all. Perhaps the things suggested here are given in the majority of our schools to-day; perhaps they seem impracticable; perhaps this seems like a large program; but if you have visions of the crowding out of some lessons that seem essential, go down into the crowded district of the city and, with a real desire to help the people, study the faces of the children and then decide what seems most important. The need of economy, like malnutrition, is not confined to the crowded districts. Go into the homes of some of the children whose parents are in comfortable circumstances and talk with the mothers until you get their confidence, see their problems and learn not alone of their struggles, but of the way in which they adapt themselves to circumstances.

Girls are going to learn to do the things that appeal to them; so that if there is not time to teach all the cooking processes in class we may be sure they will find out later, but they may get the message of health when it is too late. When they have homes and children of their own and are asked whether they learned at school things that were most important, what should the answer be?

THE HEALTH PLAY AS FIRST AID TO NUTRITION WORKERS.

By Florence Earle Haviland, Child Health Organization of America.

MANY unique methods of interesting children in acquiring health habits are being developed by health workers and teachers throughout the country. One of the most popular and effective is the health play. Children love the dramatic form and taking part in it themselves is a joy to them.

The health plays which were recently given in group competition in New York City were planned, written and encouraged by teachers. The success achieved should mean many more such efforts and a steady lowering of the present high percentage of underweight children. A journey into this delightful land of health make-believe is well worth while to any one who wishes to know just what a health play is like.

It is hard to tell who is the more excited, this shining-eyed child beside me in the audience, or that one whose suppressed giggles come from behind the scenes where she is hurriedly rehearsing the rôle of Fruit, or Cereal, or even Coffee, the villain. For we are at a health play, now a most popular school affair. Of course it is a lesson, too, but how much fun!

In a health play the children act out a health program, or make personified foods speak for themselves, as in this particular play which is called

"The King of Foods."

Here's the Herald. What has he to say?

(*He waits stiffly for quiet, and then looks very confiding.*)

I know something that I'm going to tell,
Do as we advise you and you'll be well.
Listen very carefully, keep as still as mice,
We are going to give you some excellent advice.

He calls upon Fruit. Out she comes with an air of conscious virtue and explains how useful she is in a child's diet.

Cereal, Vegetable and Egg, each drives a brisk and spirited health message home and has the fun of impersonating something to eat at the same time.

An Attendant brings in Meat, represented by quite a small boy.

> We gave this part to one not tall,
> To remind you to make your meat portions small.

This is very definite advice, and the child beside me chuckles in appreciation, for that small boy Meat is a friend of his. The children will remember the place of Meat on the menu of childhood.

Sugar, too, has an Attendant.

> I know her name is Sugar because she looks so sweet,
> Make your portions of sugar just as small as meat.

Perhaps there is just a touch of wistfulness in the audience at this point.

But sturdy Brown Bread and Butter join the group of foods, and stately Milk follows. They are all there now, plain to be seen, every food that a child should eat. And the drama has just begun.

Milk claims to be the King of Foods and all the foods accept him. They are a bland and happy group of courtiers, whose complacence is only disturbed slightly by the sudden appearance of Milk's rival, Coffee, a sinister figure with drawn dagger. They know Milk will make short work of him.

The Herald goes for a Judge, and Milk and Coffee lay their rival claims before him.

All of the virtues of Milk, all of the horrors of Coffee, are presented so vividly that no child could forget the implied comparison, and in the end, Coffee, the impostor, is driven away with great scorn by the outraged foods.

The child beside me is pleased over the victory of Milk, the hero.

A song and dancing by Strangers called in by the Herald finish the play.

Was the play a success? The spontaneous enthusiasm of the participants and the audience is the best indication. They were delighted by it. What stereotyped lesson in hygiene could possibly equal in value this appeal to the child's dramatic sense, this enlistment of his own play instincts? The spirit and verve with which the actors took part in "The King of Foods" is only a promise of what they may achieve in the future. And every successful lesson means more healthy children in America, more parents who know how to approach the problem of malnutrition.

"DR. MILK BOTTLE."

If the "King of Foods" was successful, "Dr. Milk Bottle," a slightly more sophisticated production, was equally so. Here is Mary, the lackadaisical school girl who won't take part in athletics or do any of the healthful vigorous things that her classmates do. They refer her to Dr. Milk Bottle.

He is an amusing figure, dressed in a white bottle-shaped gown made over hoops to represent a bottle of milk. Very brusque he is, too, but kindly. He has for Aids, Protein, Lime, Fat, Sugar and the Vitamines, who are twins. In spite of Mary's feeble protests these Aids put her through a smart examination to the huge amusement and instruction of the audience.

"She's flabby," says Protein. "Notice these poor little muscles. Sure sign she has no energy; little vitality. A lack of protein, Sir. Give her plenty of cheese and teach her to like the thick curd of sour milk. Finest stuff in the world. Full of protein."

"Growing too fast, Mary," says Lime. "Build both ways, tall and strong. Get the very best lime. You'll find full quantity and quality in every glass of milk."

Fat handles Mary roughly enough. "Hands cold, eyes lifeless, posture listless and drooping. Why you're as thin as a rail!" Fat proposes to be the cure for this, and Dr. Milk Bottle interposes some terse remarks.

"Chew your milk, Mary. Chew the butter out. Don't gulp it down. A pint a day, at least. Come on, Sugar, this is a nice girl, I want you to help her."

So Sugar has his say about Mary, and last of all the Vitamines, the magic twins. The result is, of course, an interval of time during which Mary is remade by Dr. Milk Bottle into a happy, romping, vigorous little girl.

And what has the audience gained from all this? A fairly clear understanding of the food value of milk plus all the fun and interest of the adventures of Mary. Psychologists tell us that impressions which are made most vivid and interesting by their attendant circumstances are retained the longest.

Children who see the play "Dr. Milk Bottle" will not only understand but remember why milk is an essential food for the children. There is no end to the possibilities of such dramatic presentations, and the development of this effective method is entirely in the hands of the teacher. It is not the finished production but the spirit in the producing that spells success or failure.

Simpler plays may be developed to teach health facts in a more or less dramatic way to the younger children in the schools. But it has been said that the older children appreciate the simplest, and the younger children seem to understand the more elaborate forms of health plays and games, and that less adjustment to age has been found necessary than was at first expected.

"THE HOUSE THAT HEALTH BUILT."

"The House that Health Built," for instance, is not as complicated as a play, but is a sort of progressive recitation by half a dozen children carrying charts to represent a well-nourished girl, a pint of milk, cereals and other foods. As the children recite, they build the house with the charts. The rhymes are instructive and amusing, with the repetition familiar in the "House that Jack Built." This might be used in less advanced grades.

The main idea of dramatizing and making vivid to the child all the rules for healthy living, with the child's own co-operation, is so sound that it will appeal to parents and teachers everywhere. Soon will be added to the "Health Fairy," "Cho Cho, the Health Clown," and the "Picture Man" that curious genius the "American School Child Himself." With his assimilative powers he will grasp and portray to his schoolmates and parents the health knowledge that will replace any outworn standards of living that now cripple our youth.

The plays described are soon to be available in printed form. But they will serve the cause of health best as a stimulus to original productions.

If the children acting are living up to the health habits and show it, the lesson is made doubly effective. A part in a health play should be awarded for faithful following of all suggestions as to diet, sleep, fresh air and out-of-door exercise.

RELATION OF DISEASED TONSILS AND ADENOIDS TO NUTRITION.

By Charles T. Porter, M.D., Consulting Surgeon, United States Public Health Service Hospital, Assistant in Laryngology, Massachusetts General Hospital, Boston, Mass.

In this article I shall devote most of the space to the relation of diseased tonsils and adenoids to nutrition in children. This, for two reasons: first, it is during childhood, more especially during the first eight to ten years of life, that proper nutrition is most important; and, second, because it is in children that we have been able to collect the data, as adults are too busy to allow the proper time for study in groups.

However, in the army camps we were able to follow many cases before and after removal of diseased tonsils and adenoids, and almost without exception the patients were better physically, gained weight and were better able to carry on without loss of time after operation than before.

The effects of diseased tonsils and adenoids may be said to effect nutrition unfavorably in two ways: first, by the mechanical blocking of the upper respiratory passages, and, in children, interfering with swallowing in extreme cases of hypertrophy; and, second, by the absorption into the circulation and general system of the toxic products of infection.

In evidence of this latter cause we may take as an example the high temperature and high white cell count of the blood in acute cases, which are, in reality, the result of the effort on the part of the body to combat the infection and throw it off. This is, of course, an extreme condition, but it serves to illustrate what is going on in a lesser degree in the chronic case, with occasional flare-ups or exacerbations, — a condition in children evidenced by slight or no soreness of the throat, tender, swollen glands on the side of the neck below the angle of the jaw, accompanied possibly with loss of appetite and perhaps vomiting and diarrhœa in young children.

It has been repeatedly shown that during a severe attack of tonsillitis in a child of six or eight years of age, there will be a loss of weight of from 10 to 15 per cent of the normal weight, — a loss that will require weeks or, perhaps, months to regain, especially if there should be one or two exacerbations. I say exacerbations advisedly because I do not believe that once a tonsil is thoroughly infected it ever entirely clears up. There is much evidence to support this in the cases of the group of streptococcus carriers in the army camps where every means known was tried to clear up these cases, but after stopping treatment for a short time the cultures would again be positive. A large percentage of cases, both in children and adults, during an attack of acute tonsillitis, and for some time thereafter, will show albumin in the urine, and it is generally recognized that the tonsil is frequently the focus of infection for endocarditis and arthritis, more especially in children.

In a large series of cases seen by me and operated at the New England Home for Little Wanderers, in connection with work with Dr. W. R. P. Emerson, it was astonishing to watch the improvement both mentally and physically after removal of diseased tonsils and obstructive adenoids. Cases would come under observation who were from 10 to 30 per cent underweight, pigeon-chested or flat-chested, with protruding scapulæ, and the general attitude when standing that of an old, bent, rheumatic man. An examination would show large diseased tonsils and adenoids completely blocking the nasopharynx, with a chain of enlarged glands on either side of the neck.

These cases showed no, or scarcely any, gain until after the tonsils and adenoids had been removed, and would then start to gain almost from the day of the operation. These cases also showed a marked gain in other respects, especially mentally. Cases were given a mental test on admission and these undernourished cases, almost without exception, proved to be a year or two younger mentally than their actual age. Within six months after operation they would come up to almost a normal condition.

By operation I do not mean cutting off the tonsils, but carefully and fully removing them in capsule, as well as thoroughly cleaning out the post-nasal space of adenoids.

Do not understand me to advocate indiscriminate removal of tonsils and adenoids in all cases, for I belong to neither extreme. I do, however, believe that in undernourished children, and a larger percentage are undernourished than is commonly realized, a careful general examination should be made, and if diseased tonsils are found, or if the child is a mouth breather from adenoids, that these should be removed. It has been demonstrated in my own practice within the last year that with cervical adenitis (swollen glands of the neck) the removal of the tonsils will frequently save an external operation for dissection of the glands, with the resultant scarring of the neck. In almost all cases it is useless to remove the anterior cervical glands without removing the diseased tonsils, which are the primary cause, either before or at the same time as the gland operation.

An article, which tends to confirm the results mentioned in our work at the Little Wanderers' Home, by Maud A. Brown of Kansas City, Mo., appeared recently in the Journal of the American Medical Association based on observations on school children.

I do not think it advisable to operate tonsils in children under three or four years of age, except in very rare instances. However, removal of adenoids before this age is frequently advisable from the standpoint of nutrition, as well as from the standpoint of the ears. If done at this age the adenoid frequently will recur and require removal again later; however, in the meantime the child will have the proper use of its nose and possibly escape serious complications resulting from middle ear infections.

In adults diseased tonsils often play an important rôle in goiter cases, and frequently mild cases will subside after removal of these foci of infection which persistently refused to yield to treatment before removal of the tonsils.

In summing up I would say that diseased tonsils and adenoids play a large part in the nutrition or, rather, malnutrition of children especially, and to a lesser degree in adults.

I should like to add, also, that in the baby room at the Massachusetts Charitable Eye and Ear Infirmary we are seeing fewer chronic discharging ears in infants and children as the practice of removing adenoids becomes more prevalent.

THE COMMONHEALTH.

Bimonthly Bulletin of the Massachusetts Department of Public Health.

Sent Free to Any Citizen of the State.

Merrill E. Champion, M.D., Director of Division of Hygiene, Editor.
Room 546, State House, Boston, Mass.

Syphilis in the Child. — To all among our readers who have visited one of the large city hospitals and who have been shown through the children's wards, there to witness the ravages of inherited syphilis upon innocent childhood, the article by Dr. Watters in the present issue of "The Commonhealth" will come as a beam of light on a dark and unforgettable mind picture.

In view of the statement based on a careful study of facts that 84 per cent of the children in one foundling institution in this country were found to be syphilitic, we cannot refuse to face the situation frankly, neither can we afford to treat the subject lightly, even though our general maternity hospitals show "only" an incidence ranging from 3 to 11 per cent of syphilitic cases among all births, as shown by the figures quoted by Dr. Watters. It would seem fair to assume that at least the smaller of these two extremes in hospital rates may be comparable with conditions in society at large. As the number of births occurring annually in Massachusetts is in the vicinity of 100,000 we may reasonably infer, then, that 3,000 syphilitic babies are born each year in the State.

Furthermore, we know that many more, — and no one can state how many, — die at birth or are lost by premature birth because of the same disease. Syphilis as a cause of stillbirths has already been shown to be nearly as great as the three next largest causes taken together.

In the light of these facts we must give due heed to the great possibilities now opening before society of permanently and to a marked degree decreasing the large amount of crippling and death-dealing disease which has all through the ages descended upon the helpless and innocent of each new generation. This can be done by prompt application of modern treatment to the prospective mother of the unborn syphilitic child, as is amply shown in Dr. Watters' experience at the Robinson Memorial. Such care, begun early in the period of pregnancy, can practically abolish syphilis in the new-born child.

Veritably it is the right of every child to be well-born, and in this day and generation that right may become the heritage even of the child of known syphilitic parentage.

Is this not an accomplishment worth striving for?

Ask the one who has taken that walk through the wards of the great hospital. — Mary R. Lakeman, M.D.

The Value of School Lunches. — Two things are essential if we are to have happy, vigorous children who shall become happy, efficient men and women, — proper play and proper food.

The play propaganda has been pushed vigorously for several years and has fairly well advertised the need and value of free, vigorous, properly supervised outdoor play.

Concerning the need, value and content of a proper diet, however, little or nothing is known by the average parent, and, outside a few communities, there is practically no organized effort toward a proper diet for children or any real study of the relation of diet to physical condition or even any frequently recurring, periodic testing of weights as related to race, age and height.

The natural place for carrying on such a campaign, and the only practicable place for the ages five to fifteen years, is in the school. Scales should be as much a part of school equipment as maps. A child would better know what his weight is and what it should be for his age and height than to know the average annual rainfall of Central Africa.

The Red Cross has vigorously pushed the dental clinic, — one of the most important measures for the preservation of health, — but most of us are only recently learning what an intensely important factor in teeth preservation is proper diet. Again the best and proper place to drive home this information to both child and parent is the school.

As a part of its peace-time program, this question of nutrition is one phase, and a very important phase, of the great health problem in which the American Red Cross is eager to assist, in fact has materially assisted in several localities. — Charles H. Keene, M.D., *New England Division, American Red Cross.*

Prenatal Letters in Italian. — We wish to call the attention of our readers to the fact that the prenatal letters, hitherto issued only in English, may now be had in Italian. This is in the nature of an experiment and forms an exception to our usual rule of issuing educational material only in the English language. There are many reasons for such a rule: chief among them are the desirability of encouraging the use of English by the foreign born; the fact that a large proportion of those in this country who cannot read English cannot read any other language; the desirability of having the children interpret health literature to the parents, since both will profit thereby; and the fact of the high cost of getting out literature in foreign languages.

It seems logical, however, to make an exception in regard to the prenatal letters, since because of their very nature it is not particularly desirable to have the children undertake to interpret them.

Reports from those making use of these letters will be gratefully received and suggestions as to their improvement are desired.

NEWS ITEM.

The Division of Hygiene is making up new sets of stereopticon slides, and desires for this purpose new, live pictures from our own field, — good pictures with a human interest, good pictures full of action. A few suggestive subjects are: scenes in well-baby clinics, — weighing and measuring, examining, etc.; out-door sleeping arrangements for children; the public health nurse in her various activities, — in the home, in school, in industry, etc.; tooth brush drills; nutrition clinics; school lunches; outdoor play; posture work. Many equally interesting subjects will present themselves to the health worker who possesses a camera and will use it in the service of the common health of the Commonwealth.

FIFTIETH ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

The fiftieth annual meeting of the American Public Health Association will be held in New York City, in November, 1921. The date which is tentatively announced is November 14 to 18.

It is interesting to note that Dr. Stephen Smith, the founder and first president of the association, is now entering his ninety-ninth year. He is still active and vigorous and is expected to celebrate his approaching centennial together with the semi-centennial of the association.

The first organization meeting of the association was held in New York City on April 18, 1872, and that is one of the reasons for selecting New York City for the celebration of the semi-centennial. Other considerations are the convenience to foreign representatives and to Dr. Smith, who lives in New York City, and especially a plan to conduct demonstrations of public health administrative methods in the laboratories, executive offices, garbage-disposal plants, and similar centers of public health interest, in which New York City is unsurpassed.

It is expected to present in connection with the celebration a review of the progress of the various branches of public health within the last fifty years. The sectional programs will include public health administration, vital statistics, laboratory, food and drugs, sociology, sanitary engineering, industrial hygiene, and child hygiene.

THE DEMONSTRATION ROOM OF THE BOSTON DISPENSARY FOOD CLINIC.

By Esther H. Funnell, Dietitian.

FOLLOWING the natural trend of development, the food clinic outgrew its originally allotted space at the Boston Dispensary. Patients were referred from other clinics in increasing numbers. Social workers and guests frequently wished to come in for conference or observation. The result was that the one small room became wholly inadequate to meet its needs. Thus it was that the food clinic annexed a large adjoining room, which is used exclusively for group work. There were three reasons for instituting this group work. First, for the purpose of efficiency, for when there are many patients with a similar diagnosis much time may be saved by taking them collectively; secondly, there is the stimulation which is bound to arise from group contact; lastly, was the reason which grew out of the recognized need for instruction in the correct ways of using the right foods and also to introduce variety into the dietaries of the patients. So it was that the demonstration room came into existence.

The room was equipped with the idea of presenting a homey atmosphere, where the patients would enjoy coming together. In the center of the room is a long oilcloth covered table, convenient to the china closet at one side and the three-burner gas stove at the back. The full length built-in cupboards furnish the necessary storage space.

Other equipment includes a large sink, an ice box, a desk, a pair of scales, six chairs and two settees. Free wall space is devoted to posters which tell the story of foods and their classification.

There are at present five groups meeting weekly, for the purpose of learning about foods which will suggest variety and may be used in carrying out the diet prescribed. Enough food is prepared in the demonstration so that each patient may have some to take home. Paper cartons of different sizes are provided for this purpose. It is one thing to tell the people at home that they had eaten something new, but it is quite another to have a sample to prove that what they had eaten tasted good. Occasionally the patients participate in the preparation of the food. This does much to "break the ice" and at the same time stimulates an increased interest in what is going on. With the exception of the children on Saturday mornings, the groups are composed only of women. When the patient is a man, he is frequently asked to bring his wife or mother in for consultation. In any case where the desired results are not obtained, the patient is asked to record what he eats for one week in a "What I Eat" book which is given him. This will usually show up the factors standing in the way of results. The methods of cooking used in the group work must be dependent to a great extent upon the nationalities represented. Then, too, the ever-present problem of limited incomes must be met. With every group there is a so-called "forum" which provides for discussion and questions under direction.

The following paragraphs are explanatory of the outlines given below: —

The Diabetic Group is conducted with the particular object of introducing variety into the necessarily monotonous diet and at the same time keeping the patients sugar-free. The diet prescribed at first is uniform for all diabetic patients. It consists of the vegetables and fruits containing 5 per cent and occasionally 10 per cent carbohydrate; no bread except bran cakes; only the white meats, and restricted fats. In two or three weeks the patients become sugar-free, unless it be an exceptional case. Occasionally the starvation treatment in modified form is given. A urinalysis is made at each visit to the clinic. When the urine examination has persistently shown an absence of sugar for perhaps two months, the patient is discharged from the group and is told to report once a month. The increase of carbohydrate in the diet is done individually as the tolerance is found to be raised.

The diet prescribed for Constipation includes much fruit and vegetables, coarse breads and cereals, with plenty of water to drink. Meat and fat are restricted. The demonstration aims to show the group a variety of ways of carrying out this diet.

The Obesity Group is very interesting and perhaps the most spectacular. The diet consists mainly of fruits and vegetables, with three slices of bread daily. Meat and fish are excluded entirely, because it is found that if they eat these animal foods their appetites are satisfied before they have eaten enough vegetables. The amount of liquid is restricted to three cups a day. The particular problem of this group lies in convincing the patients that there is still plenty they may eat, and that eating this food will not make them weak. The results, however, are particularly gratifying in most cases. For instance, Mrs. W. has lost 40 pounds in four months.

The group which is called Mothers is somewhat miscellaneous. Some of them are themselves undernourished. Some have children who are underweight. Still others are there merely to learn how to cook. The work is arranged according to the needs of the particular group.

Saturday is given over to a class of underweight children of various ages. Unlike the other groups, the children themselves do the cooking under careful supervision. When they first enter the class, they are told their present weight and their normal weight. The weight of each child is taken weekly and recorded on the food clinic cards, which are filed with the medical records. Each lesson is accompanied by a talk or story in which food values are taught in terms of growth and repair material, energy food, regulators and iron. When a child reaches his normal weight or has shown that he is undergoing a steady gain, he is discharged and told to report monthly.

The following outlines are used as a basis for the group work: —

DIABETES.

I. Breads: —
    1. Talk.
        Explanation of use of special flours in diabetes.
    2. Demonstration.
        Bran cakes or gluten muffins.
    3. Forum.
II. Vegetables: —
    1. Talk.
        Explanation of use of low carbohydrate vegetables in diabetes.
    2. Demonstration.
        Scalloped tomatoes with bran or
        Cabbage or celery au gratin.
    3. Forum.

III. Vegetables (continued).
  1. Talk.
    Value of greens.
  2. Demonstration.
    Peppers stuffed with bran, tomato and onion or
    Cooking of greens.
  3. Forum.
IV. Meat: —
  1. Talk.
    Kinds of meat to eat in diabetes.
  2. Demonstration.
    Veal stew with vegetables.
    Other ways of cooking veal.
  3. Forum.
V. Vegetables cooked in stock: —
  1. Talk.
    Kinds of soup to eat in diabetes.
    Amount of liquid to take daily.
  2. Demonstration.
    Tomato, celery or vegetable soup.
  3. Forum.
VI. Salads: —
  1. Talk.
    What to put into salads.
  2. Demonstration.
    Tomato jelly or perfection salad.
    Other vegetable salads.
  3. Forum.
VII. Cheese: —
  1. Talk.
    Use of milk in diet.
    How to make cottage cheese.
  2. Demonstration.
    Making of cottage cheese.
    Salad of cheese and olives.
  3. Forum.
VIII. Desserts: —
  1. Talk.
    Use of sugar substitutes.
  2. Demonstration.
    Custard, baked or soft.
    Stewed rhubarb or
    Lemon jelly.
  3. Forum.

CONSTIPATION.

- I. Breads: —
  - 1. Talk.
    - Why eat special foods for constipation.
    - Value of bran as roughage.
  - 2. Demonstration.
    - Bran muffins or oatmeal bread.
  - 3. Forum.
- II. Cereals: —
  - 1. Talk.
    - Value of coarse cereals as regulators.
  - 2. Demonstration.
    - Cooking of oatmeal or Pettijohn.
  - 3. Forum.
- III. Vegetables: —
  - 1. Talk.
    - Value of vegetables as regulators.
    - Value of water drinking (six glasses of water a day).
  - 2. Demonstration.
    - Scalloped cabbage or onions or tomato with bread.
  - 3. Forum.
- IV. Salads: —
  - 1. Talk.
    - Value of salads as a means of using fruit and vegetables.
  - 2. Demonstration.
    - Vegetable salad or
    - Prune and bran salad.
    - Salad dressing.
  - 3. Forum.
- V. Fruit: —
  - 1. Talk.
    - Value of fruit as a regulator.
    - Use of fruit between meals.
  - 2. Demonstration.
    - Baked apples, stuffed, or
    - Prune and apricot sauce.
  - 3. Forum.
- VI. Fruit in puddings: —
  - 1. Talk.
    - Value of fruit and cereal puddings.
    - Detriment of pie and doughnuts.
  - 2. Demonstration.
    - Prune whip or
    - Apple tapioca or
    - Fruit jelly.
  - 3. Forum.

OBESITY.

I. Breads: —
  1. Talk.
    Value of non-fat-producing foods.
    How much bread to eat daily.
  2. Demonstration.
    Bran muffins or entire wheat bread.
  3. Forum.

II. Soups: —
  1. Talk.
    Value of soups as bulk.
    Amount of liquid to drink (three glasses a day).
  2. Demonstration.
    Tomato soup.
    Vegetable soup.
  3. Forum.

III. Vegetables: —
  1. Talk.
    Value of vegetables as bulk.
  2. Demonstration.
    Squash or other vegetables in season.
    Scalloped tomatoes with bran.
  3. Forum.

IV. Salads: —
  1. Talk.
    Value of salads as bulk.
  2. Demonstration.
    Tomato jelly or vegetable salad or prune and bran salad.
    French dressing.
  3. Forum.

V. Desserts: —
  1. Talk.
    Value of fruit as regulators and bulk.
  2. Demonstration.
    Fruit jelly or fruit pudding.
  3. Forum.

MOTHERS.

- I. Breads: —
  - 1. Talk.
    - Value of coarse flours in breads.
    - When and how to use quick breads.
  - 2. Demonstration.
    - Bran muffins.
    - Quick bread of oatmeal or bran.
  - 3. Forum.
- II. Cereals: —
  - 1. Talk.
    - Value of cereals.
    - Milk *versus* tea and coffee.
  - 2. Demonstration.
    - Cooking of Pettijohn or
    - Cooking of oatmeal with raisins.
  - 3. Forum.
- III. Use of milk: —
  - 1. Talk.
    - Value of milk as growth and repair material.
  - 2. Demonstration.
    - Cream of tomato soup or
    - Fish or corn chowder.
  - 3. Forum.
- IV. Vegetables: —
  - 1. Talk.
    - Value of vegetables as regulators.
    - Value of vegetables as source of iron.
  - 2. Demonstration.
    - Creamed or scalloped vegetables or
    - Soufflés.
  - 3. Forum.
- V. Milk desserts: —
  - 1. Talk.
    - Milk desserts *versus* pie and cake.
  - 2. Demonstration.
    - Chocolate cornstarch pudding or tapioca cream or custards.
  - 3. Forum.
- VI. Fruit: —
  - 1. Talk.
    - Value of fruit as regulators.
    - Value of fruit as source of iron.
    - Value of water drinking (six glasses a day).
  - 2. Demonstration.
    - Prune whip or
    - Apple tapioca.
  - 3. Forum.

HEALTH CLASS.

Foods and their Value.

I. Growth and repair foods: —
  1. Talk.
    Value of milk, cream, butter, cheese, eggs and meat.
    Detriment of tea and coffee.
  2. Demonstration.
    Cocoa.
    Milk soup or chowder.
  3. "What I Eat" books given out, to be kept for one week and returned.

II. Energy foods: —
  1. Talk.
    Value of sugar and starches.
    When to eat candy.
  2. Demonstration.
    Cooking of cereal.
    Cornstarch pudding or candy making.

III. Regulating foods: —
  1. Talk.
    What becomes of the food not used for muscle, bone and blood?
  2. Demonstration.
    Cooking of carrots (creamed and buttered).
    Cooking of squash (baked and boiled).
    Escalloped onions with peanut butter.

IV. Iron: —
  1. Talk.
    Value of mineral matter.
    Use of iron in the body.
    Foods which furnish mineral matter.
  2. Demonstration.
    Prune and apricot sauce or
    Baked apples stuffed with raisins.
    Beef stew with vegetables.

V. The kinds of foods to eat at each meal: —
  1. Growth and repair foods.
  2. Energy foods.
  3. Regulating foods.
  4. Mineral foods.

NUTRITION WORK OF THE FEDERATED JEWISH CHARITIES OF BOSTON.

By Etta S. Sadow, S.B., Dietitian, Federated Jewish Charities, Boston.

PEOPLE interested in philanthropic work are coming to realize that in order to carry on any branch of work specialists are not only an asset but a necessity, if problems are to be solved speedily, effectively and permanently. The Federated Jewish Charities of Boston have long realized this need and as a result have employed specialists in its various departments. One of its latest developments has been the establishment of a dietetic bureau with a trained dietitian in charge, whose function has been to develop any nutritional program and to extend the service of social workers where a dietetic or health problem in families existed. While the work is still in its infancy we are able to show some results which prove its worth and which help to impress the fact that a trained dietitian in the field of social work is essential. It has been found that very often a whole family problem can be solved by the dietitian alone, for her work is the kind which establishes immediately an intimate relationship between the family and herself. It requires a food specialist to teach the mothers how to get along on a small income, what foods to purchase to receive the most food value for her money, and how to prepare these foods so that they will be attractive, well seasoned and digestible.

It has been the aim of the bureau, therefore, to outline and develop a preventive program whereby mothers can be taught that by means of proper hygiene, proper management and proper control of the children the physical condition of her family can reach and keep "up to normal" even on a limited income. The children on the other hand are taught that, by learning the rules of health and observing them carefully, a healthy, strong body temple will be the result and the effort to get "up to normal weight" will be diminished. A definite program has been devised for carrying out these plans, and it is by means of a nutrition clinic with thorough and intensive follow-up work in the home, both with the individual mother or mothers in a group, that we have been able to obtain some satisfactory results.

Early in the spring a nutrition clinic was established by this organization at the health unit, 17 Blossom Street, Boston. The original purpose of this was to make a study of the physical condition of children coming from dependent families particularly, but as soon as its existence became better known, children from all kinds of families began to wander in to "see if they were up to normal weight," and to collect the material distributed at each meeting which tells "what to do to become healthy and strong!" Gradually children came to be referred by social workers, schools, and even hospitals and dispensaries have recommended their coming for the sake of the lessons taught and because of the benefit derived from follow-up work in the home.

Visits are made in the homes of each child referred, prior to their coming to the clinic. The purpose of this is to gain an idea of the background of the home from which the child emanates, and also to get information concerning the social and physical history which is indispensable to the physician in making his diagnosis. It is readily appreciated that it is of great importance for the doctor to know that Sammy's father is at present receiving sanatorium care for tuberculosis, or for both the dietitian and doctor to know that Annie's mother is a widow, receiving an allowance which is insufficient for purchasing the kinds of food required by Annie to help her gain those 15 pounds necessary to bring her up to normal weight!

The nutrition clinic is in charge of a physician, a dietitian and an assistant. The children are assembled before the arrival of the doctor, and, having removed shoes and heavy outer garments, are weighed and measured by the assistant while the dietitian does the recording. Each child is told his or her weight; printed health rules, or any health literature prepared beforehand, are distributed, and the examinations then take place. The children strip to the waist, and examinations are carefully done so as not to expose them to cold or draught, and only three children are ready at a time.

The results of the examinations and doctor's recommendations are at once tabulated and sent to the social worker interested in the family to which the child belongs, and it is her duty to make the necessary arrangements for the removal of all possible physical defects reported. Cardiac and anæmic cases are referred to the children's bureau of the Federated Jewish Charities. The function of this bureau is the placement either in private homes or special institutions of children who are cardiacs or anæmics or malnourished and also children requiring convalescent care. The homes are selected by trained workers and it is here that the children are afforded the needed rest, diet and supervision for the physical upbuilding.

That some impression is made upon the child manifested itself one day when the dietitian was visiting the Country Week Home of the Federated Jewish Charities, where one of the children, a member of the nutrition clinic, came running up and gleefully announced that she had gained 3 pounds and was learning to eat everything so that she could "come up to normal."

While the first essential in nutrition work is a thorough physical examination of each child, the next and perhaps most important step is the so-called follow-up work or home visiting. The home is the place where the social dietitian or nutrition worker can do her best work, for, as we all know, it is when the mother is in her own home, acting in the capacity of hostess, that a most intimate relationship can be established, and, especially, when the discussion rests with the physical condition of the children, what they are eating, why they don't like cereals, and why it is impossible to give the required quart of milk to the most undernourished of children. It is in the home that the dietitian determines which of the predisposing factors to malnutrition, *i.e.*, insufficient income, overfatigue, poor hygiene, lack of home control, lack of knowledge of proper food and diet, exist and decides upon the method for eradicating them. If the budget is inadequate for purchasing the extra food necessary, a conference is called between the social workers and dietitian, necessary expenditures of the family figured out, and deficit supplemented. Very often it is merely a question of education in proper food and food values, or of preparing the foods so that the children will eat them. Thus an opportunity presents itself to give home demonstrations in cookery and to "get over" information which could be imparted in no other way.

The results of the home demonstrations have been so successful that one of the mothers suggested that at the dietitian's next visit several of the mothers whose children were "pale and thin and don't eat" be allowed to come in and reap the benefits of the instruction. Many times the children are present during these demonstrations, and, when told that a certain food will help bring them "up to normal," decide to "like it," and become intensely interested in its preparation.

It is by means of intensive follow-up work, therefore, that the physical condition of families has been improved and home conditions have been corrected.

Weight charts are kept of all underweight children who return each week to the clinic to be weighed. The charts are taken to the home and during the weekly visits are carefully studied with the mother and child and reasons for the loss or gain discussed. Unhappy is the mother who finds that her child has lost!

This, in brief, is the nutritional work carried on by this organization. It is hoped to enlarge and extend the program this coming autumn, and already plans are being made for furthering the work.

Mention might here be made that in addition to the work done in connection with the nutrition clinic, all cases referred by medical social service workers as needing dietetic advice and treatment are also followed up by the dietitian.

THE VALUE OF THE MODERN HEALTH CRUSADE.

By Frederic Edwards, Educational Secretary, Massachusetts Tuberculosis League.

SOME four years ago the National Tuberculosis Association contributed to the schools of the country a practical system of health education known as the Modern Health Crusade. Since that time the value of the crusade has become so apparent that within this country at the close of the school year, June, 1920, about 6,000,000 boys and girls were enrolled as health crusaders. In addition to an enrollment which includes every State in the Union, the Modern Health Crusade has also extended its influence to foreign countries on three continents.

It is an acknowledged fact that neither children nor adults are interested in health itself as an abstract thing. Some sort of powerful indirect motive, therefore, is necessary for the creation of an interest in the formation of good health habits, and that motive the Modern Health Crusade supplies.

Long, and perhaps rightly, our educational systems have been criticized for devoting too much time to theory and too little attention to practice. Such criticism cannot be directed at the Modern Health Crusade, because it is a health movement which transfers the theory of acquiring good health into practice. It imparts a knowledge of the rules of health and encourages the observance of these rules by teaching the children how to perform daily health duties.

Ordinarily, only the nagging of teachers and parents can make young boys and girls acquire habits of personal cleanliness and the other health habits which are so absolutely necessary to their physical, mental and moral well-being. Supplanting the nagging with an element of play and romance, promoting competition, and giving attractive awards for good health habits gained and kept, the Modern Health Crusade creates and stimulates in the child a practical interest in health for health's sake.

The real direct and indirect values of the Modern Health Crusade are many and far-reaching. Four, in particular, however, seem especially important to the writer: —

1. The Modern Health Crusade provides the opportunity for children to lay the foundations of good health through the formation of good health habits.

2. The crusade reaches beyond the children and teaches the parents, especially those among our large foreign population. In the last analysis, the maker and conservator of good health in children is the parent. Any system, therefore, which calls attention of the parent not only to the health of his children, but to his own health as well, is worthy of consideration.

3. The Modern Health Crusade system for teaching practical hygiene provides a physical, mental and moral incentive for the acquisition of good health, and thus prevents disease.

4. With 6,000,000 crusaders already enrolled, the Modern Health Crusade is creating a large body of "boosters" for good health, who, when they become citizens and taxpayers, will demand and provide for their own children the medical inspection and supervision, nursing service, nutrition and dental clinics, open-air schools, physical training and sanitation which every twentieth century American town ought to have.

The accompanying "chores" tell their own story. The child who does 75 per cent of the Crusader's health chores for two, five, ten and fifteen weeks becomes successively a page, squire, knight and knight banneret in health knighthood, and attractive insignia are awarded to denote the rank and title.

Chores for Health Crusaders.

1. I washed my hands before each meal to-day.
2. I washed my face, ears and neck and cleaned my finger nails to-day.
3. I tried to keep everything unclean or injurious out of my mouth and nose to-day.
4. I brushed my teeth thoroughly morning and evening to-day.
5. I took ten or more slow, deep breaths of fresh air to-day.
6. I played outdoors or with windows open more than thirty minutes to-day.
7. I was in bed ten hours or more last night and kept my windows open.
8. I drank four glasses of water, including a drink before each meal, and drank no tea nor coffee to-day.
9. I tried to eat only wholesome food and to eat slowly. I went to toilet at my regular time.
10. I tried hard to-day to sit and stand erect; to keep neat, cheerful and clean-minded.
11. I took a full bath on each of the days of the week that are marked X.

Any school teacher can adopt the crusade without its becoming a burden, because it is largely a home-work proposition for children and parents. Moreover, in the schools where the greatest degree of success is attained, monitors chosen from the children themselves carry on the details, even the brief daily inspection.

The crusade is not intended to take the place of any practical textbook on hygiene. The object of the crusade is rather to supplement and enhance the value of all such books. As an agency for teaching health hygiene school superintendents and teachers voluntarily testify that they regard the results attained from fifteen weeks of the Modern Health Crusade far superior to the results attained from a year of physiology as ordinarily taught.

In an article in the June issue of the "American Magazine," Dr. Martin Edwards of Boston, a physician who gives himself to the exclusive practice of preventive medicine as applied to the individual, says: —

> Remember, it is normal to be well. Most of our ailments, outside of infectious and organic diseases, come from bad habits of personal hygiene. It ought to be obvious that you can't correct bad habits with medicines. Bad habits must be corrected by good habits, and then good health comes as a natural and logical result.

Excepting, therefore, those who are afflicted with infectious or organic diseases, it naturally follows that, substituting the good habits of the Modern Health Crusade for bad habits, or no health habits at all, good health in the average child and adult can be both attained and kept.

CO-OPERATION BETWEEN THE COOKING DEPARTMENT AND LUNCH ROOMS AS MEANS OF TEACHING NUTRITION IN THE HIGH SCHOOL.

By Julia C. Leamy, B.S., Head of Cooking Department, Quincy High School.

FROM the standpoint of nutrition, children are divided into three groups: —

1. The normal children who receive the daily necessary nourishment.
2. The malnourished children who do not receive the necessary nourishment, due to poverty in the home.
3. The malnourished children who do not receive the necessary nourishment, due to false dietary standards in the home.

The last two groups present a vital problem. For obvious reasons this problem cannot be solved in the home. Since the school is the only institution that handles all children during the critical period of rapid growth and development, it therefore offers the best opportunity for solving this problem.

Two things may be done in the schools: —

1. Supplement the home diet by well-balanced school luncheons, that is, luncheons supplying necessary food values for the growth and development of the children. These luncheons of course cannot eliminate malnutrition, but they will go far toward improving such a condition.
2. Educate the children in the importance of correct dietary standards by means of a cooking department in the schools.

These two phases of work with food are closely related and frequently are developed jointly in the schools. In the Quincy High School, Quincy, Mass., the lunch room and cooking department are under the direction of one trained worker, thus making possible a very close connection between the two departments. The lunch room and the cookery department were equipped by the city; since then the lunch room has been practically self-supporting. The director of the department outlines the courses of study for the cooking classes, without reference to the high school luncheon schedule, planning typical work in all classes; but all foods prepared in the cooking classes are utilized at the lunch counter, except small portions served in the class laboratory to enable the pupils to judge their products. The high school luncheons are planned by the director with special reference to the food value of foods served, and daily consist of —

	Cents.
Soup (vegetable, fish or meat),	6, 8
Cocoa,	4
Milk (top milk, bottom used in cooking),	5
Sandwiches: —	
Bread and butter,	5
Sweet sandwich,	6
Meat, fish or salad,	6
Hot specials (two each day): —	
Cheese, egg, fish, meat (depending upon size of serving, meat dishes are always 10 cents),	6, 8, 10
Salads,	8, 10
Desserts,	6, 8, 10
Sweet chocolate,	6, 8, 9, 10

As will be observed, the foods are sold slightly above cost, sufficient margin being allowed to pay the running expense of the lunch room. All foods, with the exception of bread and ice cream, are prepared by two paid workers, thus no definite portion of any luncheon is dependent upon class work.

Such a department is of significant importance in the school: —

1. The pupils having been taught the laws governing foods and nutrition, see those laws applied in a very practical way in their own laboratory cooking and in the luncheons served at the school counter.
2. Pupils having been given definite dietary in school, transmit these standards to a greater or less degree to their own homes.
3. By purchasing foods at the lunch counter, the school children are unconsciously developing true dietary standards.
4. By having a trained director in charge of the department, the general appearance of the students is noted and those children apparently suffering from malnutrition are reached and helped in various ways.

As an example, — last year in the Quincy High School the director noted a little girl seemingly very much under nourished. Upon questioning, it was found that the child was one of a large family, her people were extremely poor, and she was having entirely inadequate meals at home and no lunch at school. The director arranged for the child to help serve at the lunch counter for her lunches. Within two weeks reports came back from various teachers in the school of a decided improvement in the child's class work.

This is one of several cases where malnourished children have been directly helped by the school lunch room department, while the indirect results cannot be estimated.

Thus the co-operation of the cooking department and lunch room offers a most satisfactory opportunity for teaching nutrition in the high school.

NUTRITION WORK IN PRIMARY GRADES.

By Elizabeth M. Lincoln, Primary Grade Teacher, Leominster, Mass.

UNTIL recently schools have been organized and curriculums planned chiefly for the mental and moral development of the child. The lack of physical fitness, disclosed by the draft and the prevalence of malnutrition, has emphasized the urgent need for physical development. In considering the physical development of the primary school child what is found? A physical make-up that plainly indicates his chief business is to grow; thus, nutrition becomes an important factor in his development. But as nutrition is directly or indirectly affected by all health habits, it can be considered best in connection with other health work.

The goals of health work may be stated by three words, "doing, knowing, feeling," but the emphasis should be placed upon the first. Training rather than instruction in hygiene is the suggestion of Dr. William H. Burnham. Habit formation is the essential thing, for knowledge of hygiene is of little use unless it affects conduct. The information given must be definite, concrete and capable of being expressed at once in action. Much of the knowledge should be given incidentally as a situation or need arises, or by means of stories and dramatization. The appreciation of hygienic conditions should come through living in a proper health environment, of which the school and community should furnish examples. The school physician, nurse and teacher are important factors in their environment.

The methods to accomplish these aims should be largely participation, "learning by doing." Only through action can the child form habits, and as activity and play are such a large part of the child's life, "learning by doing" is the natural way for him to gain knowledge. The teacher must provide for the four essential steps in habit formation: first, a clear conception of the habit to be formed; second, a motive; third, the prevention of relapses; and fourth, pleasurable results. With small children, daily inspection by the teacher or pupils, praise and privileges will help. The problems for carrying out the above will come from situations that arise in the school, home or community. Of course, they must be of such a nature that the children are capable of appreciating them. Professor McMurry says that of all subjects "hygiene needs most to be related to the child's own interests and purposes, since it should affect his conduct directly."

Perhaps one of the first things to be considered in our primary health work is the organization of the school. Lewis M. Terman says, "There is no way for the school to atone for the evil it does when for a dozen years it assiduously cultivates pernicious habits of sedentary life." A more freely organized school in which self-expression takes the place of repression does much to give the child physical freedom which he has had up to the time he entered school and which is absolutely necessary for normal growth. It also helps to produce correct emotional attitudes which greatly affect the physical condition. Happiness is most essential for growth.

A play space, provided with educational materials, where the children are free to choose their work and position for doing it, whether standing or sitting on the floor or at a table, helps to solve the problem of greater freedom. If it is possible, a free period during the school session when all the children have a chance to initiate problems and organize groups, as well as for social intercourse, affords more relaxation, and relaxation not to be obtained from organized games.

During a period of this type, if the proper materials are provided, an immense amount of health work may be accomplished through the children's own initiative. At this time they have a chance to carry out some of the suggestions that have been given incidentally during other periods and which appeal to them, or they may originate their own problems. The interest in a problem of their own choice stimulates unusual effort, and thus provides the right conditions for the retention of the knowledge gained in solving the problem. The other children often aid in the solution or ask about it.

For example, after the interest in growth has been aroused by the children's weighing and measuring themselves and recording the results, with the teacher's help, a discussion of things that would promote growth would naturally follow. The teacher or pupils might write the list on the board and later classify it. A first-grade class worked out the following list: drink milk, drink water between meals, sleep with windows open, play outdoors, clean teeth, eat cereals, eat vegetables, eat fruit. A health bulletin, to hang in the hall, to help the other pupils in the building, was suggested during the discussion. As a result, many of the children spent their free period finding pictures in magazines for the chart. From these and from the many pictures that were brought from home, the children chose the ones suitable for the chart and stated the reasons for the choice or rejection. One child exhibited a picture of a basket of apples. A child at the back of the room called them doughnuts and was quickly informed that they were not doughnuts and that fried things were not good for children. "How to Grow," the title for the chart, was suggested by one child and approved by the class. The cutting of the letters for the title and the arrangement of the pictures furnished specific problems for drawing lessons. After the bulletin was posted in the hall, the children were heard explaining the different pictures to the other pupils, and later they were invited to go to the classrooms to tell about their chart. They wished to practice the explanation in their own room first, where they might have help from the other members of the group who were very eager to supplement the statements or correct errors.

As the list of health essentials remained on the board for quite a while, many children printed it with a stamping outfit, to take home.

Other children made health books from the magazine pictures. "Good Foods for Children," "A Good Breakfast," "Good Things for My Lunch," and "What I do After School" were titles suggested. Before taking the books home the children explained them to the class, which had a chance to ask questions and criticize. Magazine pictures of food may also be mounted on separate cards and used in games to select good foods for different occasions or for classifying foods.

During the free period different things that encourage outdoor play will be made if the proper materials are furnished. Reins, knit on spools, simple kites, marbles made of clay, and bean bags are a few possible problems. Besides the regular game work an interest in gardening and nature study provides outdoor occupation.

The school nurse gave a toothbrush drill to a group of first-grade children. Each child was provided with a clean stick with which he practiced the up and down motion of the brush on the front teeth, the rotary motion on the side and back teeth, and the brushing necessary to clean the inside of the teeth. As a result of this a child suggested that each of the children make a "Clean Teeth Chart" to take home, to keep a record of the times they cleaned their teeth. Some of the children brought back perfect records for two weeks and made new charts at home to continue the work. "Go to Bed Charts" were suggested after this. This drill also resulted in another child bringing a picture of a little girl cleaning her teeth, which she mounted appropriately and hung up to help the others. She also printed the following story for them to read: "I clean my teeth every day. I like to clean my teeth."

One of the most fruitful situations for training in health habits would be the school lunch. Milk and whole grain crackers would demonstrate a well-balanced lunch suitable for children. The washing of the outside of the milk bottles before serving, and the proper care of the dishes afterwards, could not fail to teach a lesson. The schools should have facilities so that every child could have clean hands before eating their lunch. Proper mastication, good manners and the danger of flies should be correlated with this period. If the school lunch is not yet a part of the school system, school parties, or the lunches eaten in the room on stormy days, afford opportunities for similar training. Much can be done to influence the kind of lunches brought from home through conversation. The children are always ready to talk about things to eat, and some have good suggestions to offer the class. Spontaneous remarks were heard in a primary classroom during rainy day lunch periods: "I have a good lunch. I have bread and butter," said a child who formerly brought hearty meat sandwiches or greasy doughnuts. "I think Arline has a good lunch. She has an orange." "I have fruit for my lunch, too. I have an apple." "I think we should eat cake with our meals." "I had some frosted cake for my supper Sunday night," remarked a small boy who had observed someone eating cake for his lunch. "Sweet things should be eaten with our meals." "I always have my candy right after dinner." "I had my lunch in a nice clean paper."

A means of influencing the buying of lunches, candy, ice cream, and other food from sanitary places is by imaginary trips to stores. The teacher describes one in which the fruit is exposed to dirt and flies and another where it is protected. The children decide where they will buy and give the reasons. Descriptions of the people who serve ice cream or food are quite effective.

Dramatization provides one of the best means of clarifying ideas of habits that need to be formed. Position in regard to light and correct posture are well adapted to this method. So many people fail to consider that it is bad for the eyes to face the light, that it seems especially necessary to try to teach children to avoid this strain. To do this, individual children play they are mother sitting with her sewing by the window or at the table at night, or father reading the paper, while the group offers suggestions. The children enjoy impersonating great men or special classes, as soldiers or Indians, and in this connection posture may be taught.

Then the every day routine offers many chances to make the children sensitive to healthful conditions. If they open the windows for ventilation, regulate the shades for proper lighting, record the thermometer readings, and keep the room and materials clean and in order, they become conscious of conditions that make for better health. The proper care of injuries affords instruction in first aid. In fact, each hour of the day brings a chance to help the children form correct habits of living, either by example or training. If the teacher is only conscious of the need, she will grasp the opportunities.

Lewis Terman says that the problem of nutrition is one-third economic and two-thirds educational; thus it seems that it must be solved, to a great extent, by the schools. The providing of the correct social environment that will utilize the natural interests and activities of the child in forming correct health habits and ideals will do much to solve this problem.

INTEGRATE THE HEALTH PROGRAM.

By Adelbert L. Safford, Superintendent of Schools, Reading, Mass.

THE many types of health promoting agencies need to be more definitely related to one another. They should be so organized that each will be easily available to act in co-operation with other agencies to solve a particular personal or community problem.

In the treatment of disease two processes are involved, diagnosis and the application of the remedy. In public health work, especially, it often occurs that the agency that makes the diagnosis is not in a position to apply the remedy, either wholly or partially. With proper co-operation and organization, all resources become available to deal with any situation. The human body itself is an excellent illustration of the advantages of unity of action to which a great variety of members contribute, each its special function, as the occasion demands.

The active health agencies are different in different communities, but in every community there are several. It frequently happens that these agencies act entirely independent of one another when dealing with a particular problem which might be solved better through the combined action of several. It sometimes happens, for example, even in a school system providing school physician, school nurse, physical training instructor, posture and corrective gymnastics instructor, psychologist, vocational guidance instructor, director of school lunches, and head of department of domestic science, that each works practically independent of the others, except as the teacher or principal interested in a particular case invokes the assistance of the different individuals.

In many cases the school physician, in making routine examinations, may discover serious physical defects, such as malnutrition, curvature of the spine or defective teeth. These facts are duly recorded on cards and the school physician may feel that his responsibility ceases there. All the available health agencies could well be integrated so that the results of diagnosis may be correlated and proper agencies for remedial measures invoked for each case. In no other way can efficiency and economy of action be secured.

One excellent method of integration is the community health center, directed by a community council, representing all important local organizations, such as board of health, Red Cross, anti-tuberculosis society, school committee, physicians' society, woman's club, grange, farm bureau, district nursing association, and various clinics. Such a health center and council are in very successful operation in Des Moines, Iowa. The health center is elaborately maintained, with numerous clinics, at the City Hall. A similar community council has recently been organized in Boston.

An act authorizing cities and towns of Massachusetts to establish dental, medical and health clinics and to conduct campaigns of general education relative to matters of public health was approved March 3, 1920 (chapter 100, Acts of 1920). Section 3 of this act provides that all appropriations made by cities or towns for the purpose of carrying out the provisions of this act shall be expended under the direction of the board of health.

This gives to boards of health the power to take the initiative and an opportunity for leadership in organizing and integrating health agencies, both public and private, in the community health center.

No health center is complete without ample provision for expert dietetic advice, nutrition classes and a food clinic. Nutrition work, especially, should be closely related to the numerous other lines of health work, because a suitable diet is nearly always a very important factor in restoring to health those who are ill and in enabling the well to resist disease. Normal growth and the attendant physical and mental alertness are obviously dependent upon suitable and sufficient food, as well as upon good digestion, sufficient sleep, appropriate physical exercise, abundance of fresh air, and so on.

A district nurse often finds that the inability to procure suitable food for the sick patient is the most serious obstacle to recovery.

Special attention to feeding is one of the most important items of the open-air school régime. In fact, anæmia and malnutrition are prominent diagnostic symptoms of pre-tubercular conditions, and the gain in weight is generally regarded as the measure, or at least an indication of the amount of benefit, that a pupil is deriving from the open-air school. In many open-air schools pupils with cardiac and other diseases are admitted, and there is a tendency, especially in the smaller communities, to unite in the special classes all the good features of the open-air school, the special nutrition class, the corrective gymnastic work, and classes for the mentally unstable and deficient child. In other words, all classes of physically subnormal children often may be dealt with together advantageously by correlating the remedial measures of the different health agencies, and by the same organization we may extend to the well children such features of the health program as will tend to keep them well.

Let us integrate our health programs.

REPORT OF DIVISION OF FOOD AND DRUGS.

July and August.

During the months of July and August, 1920, samples were collected in 116 cities and towns.

There were 1,469 samples of milk examined, of which 595 were below standard, 35 samples had the cream removed, 1 was skimmed milk above the legal standard, 3 were skimmed milk below the legal standard, and 129 samples contained added water.

There were 199 samples of food examined, of which 84 were adulterated. These consisted of 2 samples of butter, 1 of which was rancid and 1 low in fat; 12 samples of clams which contained added water; 2 samples of cream which were below the legal standard; 1 sample of sugar which contained lumps of cornstarch; and 67 samples of soft drinks which contained saccharine.

There was 1 drug sample examined, which was found to contain no adulteration.

There were 65 hearings held pertaining to violations of the food and drug laws.

The police departments submitted 110 samples of liquor for examination, 105 of which were above 1 per cent in alcohol. The police departments also submitted 46 samples of poisons for examination, 1 of which was aloes and ferrous carbonate pills, 1 sample was arsenic found in griddle cakes, 10 were cocaine, 22 were morphine, and 12 samples were examined for poison, with negative results.

There were 36 convictions for violations of the law, $1,415 in fines being imposed.

Harry A. Larrabee of Nantucket; James Stockton of Bellingham; Frank Cassidy of Medway; William H. Huntley of Marblehead; William Hanscom of Bolton; Joseph Gurl of North Dartmouth; Frank S. Perry, 2 cases, and William Morgeau of Attleboro; Dennis Karelis, 2 cases; Robert Peterson and Constantine Young of Hingham; Warren Proctor, 2 cases, of Lunenburg; Charles Baracos and Jacob Cohen of Winthrop; William Bouchard and John Machado of Westport; James D. Gordon, Charles Mingos and Mah Sing of Salem; Frank Reynolds, Sr., and John Sullivan of Lexington; and D. Frank Baker of Swansea were all convicted for violations of the milk laws. Frank S. Perry, 2 cases, of Attleboro, and D. Frank Baker of Swansea appealed their cases. The sentence was suspended on one of the cases of Warren Proctor of Lunenburg. James C. Kehayas, Jacob N. Segal, and John Zidros, each on 2 counts, of Boston, and Hugh R. Ferguson of Hyannis were all convicted for violation of the food laws. Jacob N. Segal of Boston appealed his case. Wilfred Dumaine of Westport; Max Slomitsky, 2 cases, and Morris Stoskin of Great Barrington; Oscar Shenkman, on 2 counts, of North Marlborough; and Barney Mirman of Monterey were all convicted for violations of the slaughtering law. Frank S. Perry of Attleboro was convicted for obstructing and interfering with an inspector in the performance of his duty. He appealed his case.

In accordance with the Acts of 1902, chapter 272, the following is the list of articles of adulterated food collected in original packages from manufacturers, wholesalers or producers: —

Watered milk was obtained as follows: 18 samples, produced by Joseph Gurl of North Dartmouth; 12 samples each, produced by D. Frank Baker of Swansea and John Perry of South Dartmouth; 11 samples, produced by William Bouchard of Westport; 10 samples, produced by John Sullivan of Lexington; 6 samples, produced by Joseph J. Arruda of Fall River; 5 samples, produced by Warren Proctor of Lunenburg; 4 samples each, produced by Frank Reynolds, Sr., of Lexington and John C. Machado of Central Village; 3 samples, produced by William H. Huntley of Marblehead; and 1 sample, produced by John H. Rich of Truro.

One sample of milk having the cream removed was produced by Joseph K. Noons of Truro.

One sample of butter low in fat was obtained from Hugh R. Ferguson of Hyannis.

Samples of clams which contained added water were obtained as follows: 1 sample each from North American Oyster Company of Boston; Almon McClain and Owen H. Thorner of Marblehead; Rufus F. Brown of Newburyport; George McLachlan of Salisbury; Hunt & Arrington and Philip A. Smart of Lynn; Walter Lufkin of West Gloucester; Mr. Brown of Hampton, N. H.; and C. A. Chase of Seabrook, N. H.

Samples of soft drinks which contained saccharine were obtained as follows: 1 sample each from National Bottling Company, Columbia Bottling Company and Essex Beverage Company, all of Lawrence; Liberty Bottling Works, Empire Bottling Company and Malden Bottling Company, all of Malden; Anthony Dyjak of Lowell; Chicopee Soda Company of Chicopee; Michael J. Slattery, Standard Bottling Company and Star Bottling Soda Company, all of Springfield; Holyoke Bottling Works and Frank Werenski of Holyoke; W. W. Boynton, Inc., of Northampton; Franklin Bottling Works of Turners Falls.

Charles Dobrowski, Standard Bottling Company, Boyle Bros. and T. Niedziela, all of Lowell; American Bottling Company, Hub Bottling Company and Cambridge Bottling Company, all of Cambridge; General Seltzer Company of Quincy; Merrimont Bottling Company of West Quincy; Wincenty Matera of Thorndike; Chicopee Falls Bottling Company of Chicopee Falls; C. B. Coates and Wheeler Bottling Company of Lynn; Superior Bottling Company and Star Bottling Company of Salem; Lake Club Bottling Company, Thos. Cataechio, American Products Company and Jacob D. Queen all of Worcester; Beverly Bottling Works of Beverly; and Everett Club Bottling Company of Everett.

There were 16 confiscations made, consisting of 261 pounds of decomposed chickens, 35 pounds of decomposed fowl, 15 pounds of tainted chicken, 125 pounds of tainted beef, 528 pounds of decomposed beef, 50 pounds of tainted beef kidneys, 30 pounds of moldy bacon, 45 pounds of decomposed veal, and 1,700 pounds of decomposed raisins;

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of June, 1920: 4,505,775 dozens of case eggs, 324,911 pounds of broken-out eggs, 7,676,869 pounds of butter, 960,355 pounds of poultry, 101 pounds of game, 6,233,845 pounds of fresh meat and fresh meat products, and 4,511,285 pounds of fresh food fish.

There were on hand July 1, 1920, 16,874,705 dozens of case eggs, 510,045 pounds of broken-out eggs, and 7,132,110 pounds of butter.

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of July, 1920: 1,146,990 dozens of case eggs, 230,558 pounds of broken-out eggs, 10,340,914 pounds of butter, 1,122,721 pounds of poultry, 8,028,240 pounds of fresh meat and fresh meat products, and 5,388,511 pounds of fresh food fish.

There were on hand Aug. 1, 1920, 16,760,820 dozens of case eggs, 525,975 pounds of broken-out eggs, 16,051,730 pounds of butter, 2,238,948 pounds of poultry, 31,552,029 pounds of fresh meat and fresh meat products, and 15,634,309 pounds of fresh food fish.

September and October.

During the months of September and October, 1920, samples were collected in 99 cities and towns.

There were 1,727 samples of milk examined, of which 486 were below standard, 19 samples had the cream removed, 1 sample of skimmed milk was not properly labeled, 1 sample was skimmed milk below the legal standard, and 109 samples contained added water.

There were 252 samples of food examined, of which 76 were adulterated. These consisted of 2 samples of butter which were low in fat; 1 sample of confectionery which was wormy; 1 sample of clams which contained added water; 28 samples of eggs, 23 of which were cold storage not so marked, 4 were stale eggs sold as fresh eggs, and 1 sample which was decomposed; 1 sample of milk powder made from partially skimmed milk; 26 samples of olive oil which contained cottonseed oil and other foreign oils; 4 samples of salad dressing which contained mineral oil; 9 samples of soft drinks which contained saccharine; 1 sample of sugar which contained a slight amount of wheat; and 3 samples of vinegar which were low in acid.

There were 27 samples of drugs examined, of which 6 were adulterated. These consisted of 4 samples of nitrous ether low in the active ingredient and 2 samples of citrate of magnesium solution which contained sulphate of magnesium.

There were 35 hearings held and 15 warnings issued pertaining to violations of the food and drug laws.

The police departments submitted 257 samples of liquor for examination, 243 of which were above 1 per cent in alcohol. The police departments also submitted 35 samples of poisons for examination, 17 of which were morphine, 13 were cocaine, and 5 samples were examined for poison, with negative results.

There were 33 convictions for violations of the law, $1,450 in fines being imposed.

John Perry of Dartmouth; John H. Rich of Truro; Joseph Steele of Provincetown; William H. Bacon of Lexington; Manuel Correia of South Somerset; John Rezendes of Somerset; Joseph C. Mello of North Westport; John Grigolonok of Concord; John Koziel of Palmer; Lorenzo Mailloux of Berkley; George Maynard of Marlborough; Charles V. Buckley and Nicholas Kicopoulos of Monson; Charles Johnson and Maroun Koury of Hull; James Donovan and James R. Spaulding of Salisbury; Salome Katilin and Peter Nobut of West Medway; William F. Litchfield and Clement Norton of Edgartown; and Joseph J. Arruda, Joseph A. Caevallu and Horace Marquis of Fall River were all convicted for violations of the milk laws. Joseph Steele of Provincetown appealed his case. Rufus S. Brown of Newburyport; William L. Fowler of Salisbury; and Jacob Puzine of Lawrence were all convicted for violation of the food laws. Rufus S. Brown of Newburyport appealed his case. The Security Trust Company of Lynn; Cushing Beef Company and Samuel Libby, on 17 counts, both of Boston; and Brockton Public Market, Inc., of Brockton were all convicted for violations of the cold-storage laws.

In accordance with the Acts of 1902, chapter 272, the following is the list of articles of adulterated food collected in original packages from manufacturers, wholesalers or producers: —

Watered milk was obtained as follows: 16 samples, produced by Leroy H. Gould of Framingham; 9 samples, produced by Manuel Correia of South Somerset; 8 samples, produced by George E. Maynard, superintendent of City Farm, Marlborough; 7 samples each, produced by John Rezendes of Somerset and Salome Katilin of West Medway; 5 samples, produced by David Jarman of Methuen; 4 samples, produced by Lorenzo Mailloux of Taunton; 3 samples each, produced by Hagop Asadoorian of North Andover and Paul Silva of Middleborough; and 2 samples, produced by Nishan Asoian of Andover.

Two samples of milk having the cream removed were produced by Peter Nobut of West Medway.

One sample of clams which contained added water was obtained from A. J. Chase of Seabrook, N. H.

Salad dressing which contained mineral oil was obtained as follows: 2 samples each from Charles H. Henderson of Arlington and Henry and Milton H. Schoenfield of Somerville.

Samples of soft drinks which contained saccharine were obtained as follows: 3 samples from the American Soda Company and 2 samples from the Worcester Soda Company, both of Worcester; and 2 samples each from American Bottling Company of Cambridge and Eagle Bottling Company of Winthrop.

Samples of olive oil which contained cottonseed oil and other foreign oils were obtained as follows: 14 samples from Moustos & Cotsis, 2 samples from Peter Armenis, 1 sample each from A. L. Mihalopous and G. Kokinakis & Co., all of Boston; 1 sample each from J. Drougas & Hellas of Peabody, and John A. Alban & Co., Inc., of New York.

One hundred and sixty bakeries were inspected, located in Boston, Brockton, Cambridge, Chelsea, Framingham, Lowell, Springfield and Malden.

There were 10 confiscations made, consisting of 68 pounds of decomposed poultry, 7,544 pounds of decomposed beef trimmings, 170 pounds of dried-out kidneys, 480 pounds of decomposed ox-tails, 95 pounds of decomposed pigs' feet, 40 pounds of decomposed pigs' tails, 54 pounds of decomposed veal, 1,320 pounds of decomposed frankfurts, 200 pounds of decomposed mixed fish, and 193 cans of decomposed apricots.

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of August, 1920: 639,300 dozens of case eggs, 539,108 pounds of broken-out eggs, 5,946,218 pounds of butter, 654,075 pounds of poultry, 2,324,133 pounds of fresh meat and fresh meat products, and 5,768,265 pounds of fresh food fish.

There were on hand Sept. 1, 1920, 15,445,830 dozens of case eggs, 844,107 pounds of broken-out eggs, 19,655,259 pounds of butter, 1,492,430 pounds of poultry, 31,018,956 pounds of fresh meat and fresh meat products, and 18,894,855 pounds of fresh food fish.

The licensed cold storage warehouses report the following amounts of food placed in storage during the month of September, 1920: 556,950 dozens of case eggs, 369,735 pounds of broken-out eggs, 3,445,141 pounds of butter, 680,281 pounds of poultry, 5,968,825 pounds of fresh meat and fresh meat products, and 2,858,432 pounds of fresh food fish.

There were on hand Oct. 1, 1920, 11,813,130 dozens of case eggs, 893,270 pounds of broken-out eggs, 19,742,554 pounds of butter, 1,199,907 pounds of poultry, 21,005,734 pounds of fresh meat and fresh meat products, and 17,926,195 pounds of fresh food fish.

November and December.

During the months of November and December, 1920, samples were collected in 106 cities and towns.

There were 1,486 samples of milk examined, of which 274 were below standard, 29 samples had the cream removed, 1 sample of skimmed milk was above the legal standard, 6 samples of skimmed milk were below the legal standard, and 65 samples contained added water.

There were 376 samples of food examined, of which 177 were adulterated. These consisted of 2 samples of bacon, 1 sample of butter, 2 samples of eggs, and 1 sample of shrimp, all of which were decomposed; 3 samples of butter which were low in fat; 1 sample of cider which contained benzoate, and 2 samples of vanilla extract which contained coumarin, none of which were properly labeled; 132 samples of cold-storage eggs not so marked, and 18 samples of stale eggs sold as fresh eggs; 1 sample of evaporated milk and cream which was misbranded; 2 samples of cocoa beans which were wormy; 3 samples of olive oil which contained cottonseed oil; 6 samples of sausage, 4 of which contained coloring matter, and 2 samples contained starch in excess of 2 per cent; 1 sample of macaroni which was wormy and moldy; 1 sample of vinegar which was low in acid; and 1 sample of scallops which contained added water.

There were 13 samples of drugs examined, of which 2 were adulterated. These consisted of 2 samples of spirits of nitrous ether which were low in the active ingredient.

There were 3 samples of soap chips analyzed for the Department of Public Welfare.

There were 48 hearings held and 20 warnings issued pertaining to violations of the food and drug laws.

The police departments submitted 627 samples of liquor for examination, 513 of which were above 1 per cent in alcohol. The police departments also submitted 32 samples of poisons for examination, 11 of which were morphine, 19 were cocaine, and 2 samples were examined for poison, with negative results.

There were 118 convictions for violations of the law, $1,805 in fines being imposed.

Hagop Asadoorian of North Andover; Nishan Asoian of Andover; Matthew J. Bennett of Burlington; Alfred Boissoneau of Tiverton, R. I.; John L. Collins of Woburn; David Jarman of Dracut; Bradford S. Johnson of Gardner; Paul Silva of Middleborough; Samuel Caro, Oscar Creamer, Anthony Economidy, Samuel Lampros, Stephen Mellar, Christ Giarskahis, Frank Rech and Charles Young, all of Springfield; Frank P. Tilden of North Scituate; Rose Harrison of Barnstable; Russell Wolcoski of South Billerica; John J. Carr of Pepperell; John Grigolonok of Concord; John S. Grouard of Nantucket; John K. Martin of Stoughton; Calvin Supernent of Groton; and John Wesley Turner of Salem were all convicted for violations of the milk laws. Alfred Boissoneau of Tiverton, R. I., and John K. Martin of Stoughton appealed their cases.

Daniel J. Harrington of Springfield; John Yuz, Mishan Thomas and Misrah Thomas of Lawrence; George Cotsis and Louis Moutsis, on 8 counts each, and Anastasias L. Mihalopos, all of Boston; Theodore Papoulas of New Bedford; Wheeler Bottling Company and Morton E. York of Lynn; Anthony Costelow of Brockton; and Peter Wincko of Cambridge were all convicted for violation of the food laws.

Kostas Armenis and Aristedes Gotsis of Boston were convicted for misbranding food.

Leon H. Bremner of Taunton; Newton Public Market of Newton; and Peter Wychnnas of Brockton were all convicted for false advertising. The Newton Public Market of Newton appealed their case.

Eugene E. Barthel and Herman Manninen of Gardner; Thomas Coutalonis and William A. Harkins of Woburn; James Danas, Daniel Direnski, Frank D. Donovan, James Duffy and George L. Perham, all of Lowell; James Bikis, Peter Frentoz, John Gotohean, Abraham Nadler, Efine Sorakes, Samuel Tillman and Angelo Tobis, all of Springfield; Newton Public Market, 2 cases, and Abraham Ruttenberg, both of Newton; Conrad Richard of Graniteville; Eugene S. Burgess, Arthur C. Carey, William R. Cathcart, Edmund R. Frye, William Holland and Herbert Terry, all of Nantucket; Levi O. Bousquet, Charles Gomes, Kostan Jacques and Abraham Besbris, each on 2 cases, and Isala Dusseault, all of Taunton; Max Altman, Patrick J. Bresnahan, Isaac Broudy, Antoni Czerwonka, Andrew Korontjis, Jacob Lipshitz, Frank Madey, Timothy C. Marra, Adlard C. Menard, Mizael Morin, John Ostrowsky, Sigda Wojciech, Frank Stasz, Anthony Suchocki, Stanley Szewczuk and Joseph Wozdanowicz, all of Holyoke; Peter Armon, Anglin Market Company, Inc., Stanislav P. Balchnas, Walter Bigns, Anthony Costelow, John Janigan, Joseph Saladaka, Anthamas Sanka and Peter Deftos, all of Brockton; Benjamin Barkonicz, Julius Golden, John B. Passlacque, Jacob Springer and Louis Springer, all of Boston; Peter Kitas, Edgar H. Benoit, Andrew P. Seibella, Julius Nathan, A. H. Phillips, Inc., and Omer LaRoche, all of Springfield; Joseph Balestri and John Clo of West Springfield; and Isaac Bechick, Morris J. Shapiro and Joseph M. Wilson, all of Lowell, were all convicted for violation of the cold-storage laws. Max Altman and Joseph Wozdanowicz, both of Holyoke; Jacob Springer and Louis Springer, both of Boston; and the Newton Public Market of Newton, on 2 cases, all appealed their cases.

In accordance with the Acts of 1902, chapter 272, the following is the list of articles of adulterated food collected in original packages from manufacturers, wholesalers or producers: —

Watered milk was obtained as follows: 30 samples, produced by John J. Carr of Groton; 13 samples, produced by John K. Martin of Stoughton; and 1 sample, produced by Leonard B. Pickering of Danvers.

Two samples of milk having the cream removed were produced by Calvin Supernent of Groton.

Two samples of vanilla flavoring extract which contained coumarin, and were not properly labeled, were obtained from Edgar M. Peck of Whitman.

One sample of sausage which contained coloring matter was obtained from each of the following: Antamas Sanka of Montello; S. Dashoff of New Bedford; H. L. Handy Company of Springfield; and the Boston Sausage Company of Boston.

One sample of sausage which contained starch in excess of 2 per cent was obtained from each of the following: J. J. Smith of Taunton; and Michael Gritz of Adams.

One sample of butter which was decomposed was obtained from the Mills Tea and Butter Corporation of Boston.

One sample of olive oil which contained cottonseed oil was obtained from Moustos & Cotsis of Boston.

There were 14 confiscations made, consisting of 224 pounds of tainted beef, 555 pounds of dried-out beef kidneys, 1,748 pounds of decomposed beef trimmings, 60 pounds of dried-out bear meat, 100 pounds of dried-out venison, 37 pounds of decomposed venison, 75 pounds of unstamped veal, 45 pounds of tainted hams, 200 pounds of dried-out miscellaneous meat, 300 pounds of soiled cheese, 40 pounds of tainted sausages, and 226 cans of decomposed apricots.

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of October, 1920: 446,970 dozens of case eggs, 88,176 pounds of broken-out eggs, 2,195,115 pounds of butter, 1,372,818 pounds of poultry, 9,315,281 pounds of fresh meat and fresh meat products, and 2,968,619 pounds of fresh food fish.

There were on hand Nov. 1, 1920, 9,786,960 dozens of case eggs, 613,746 pounds of broken-out eggs, 19,174,779 pounds of butter, 1,842,430 pounds of poultry, 24,865,856 pounds of fresh meat and fresh meat products, and 20,677,145 pounds of fresh food fish.

The licensed cold-storage warehouses report the following amounts of food placed in storage during the month of November, 1920: 191,460 dozens of case eggs, 293,719 pounds of broken-out eggs, 854,308 pounds of butter, 1,492,275 pounds of poultry, 3,888,765 pounds of fresh meat and fresh meat products, and 2,745,994 pounds of fresh food fish.

There were on hand Dec. 1, 1920, 5,660,070 dozens of case eggs, 558,060 pounds of broken-out eggs, 14,950,423 pounds of butter, 2,751,657 pounds of poultry, 24,759,277 pounds of fresh meat and fresh meat products, and 16,312,775 pounds of fresh food fish.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

Commissioner of Public Health, Eugene R. Kelley, M.D.

Public Health Council.

Eugene R. Kelley, M.D., *Chairman.*

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Sylvester Ryan, M.D.
Warren C. Jewett.

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Division of Sanitary Engineering,	Director and Chief Engineer, X. H. Goodnough, C.E.
Division of Communicable Diseases,	Director, Bernard W. Carey, M.D.
Division of Water and Sewage Laboratories,	Director and Chemist, H. W. Clark.
Division of Biologic Laboratories,	Director and Pathologist, Benjamin White, Ph.D.
Division of Food and Drugs,	Director and Analyst, Hermann C. Lythgoe, S.B.
Division of Hygiene,	Director, Merrill E. Champion, M.D.
Division of Tuberculosis,	Director, William J. Gallivan, M.D.

State District Health Officers.

The Southeastern District,	Charles W. Milliken, M.D., New Bedford.
The Eastern District,	George T. O'Donnell, M.D., Boston.
The Northeastern District,	Lyman A. Jones, M.D., Swampscott.
The North Midland District,	Charles E. Simpson, M.D., Lowell.
The Worcester County District,	Francis A. Finnegan, M.D., Worcester.
The Connecticut Valley District,	Harold E. Miner, M.D., Springfield.
The Berkshire District,	Oscar A. Dudley, M.D., Pittsfield.

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[1] Resigned Dec. 1, 1920.

[2] Appointed Dec. 1, 1920.